

Trial

Blackfeet Tribe v. USA

8/17/2016

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1 ALSO PRESENT:

2 Tyson Running Wolf, Treacie Burback

3 Megan Moore, Kristin Nam

4 Dondrae Maiden, Kristen Kokinos

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WITNESS:

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REDIRECT

RECROSS

VOIR

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SOLEIM

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RUNNING WOLF

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(No exhibits admitted.)

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1 P R O C E E D I N G S

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3 (Proceedings called to order, 9:30 a.m.)

4 THE COURT: Good morning. Please be seated.

5 We are on the record for day two in the trial of
6 the Blackfeet Tribe versus the United States, and I
7 think we're up to the redirect examination of
8 Mr. Soleim. Please come forward, sir.

9 Good morning, Mr. Soleim.

10 MR. SOLEIM: Good morning.

11 THE COURT: Do you understand that you are still
12 under oath in these proceedings?

13 MR. SOLEIM: Yes.

14 THE COURT: All right. Please be seated.

15 Whereupon --

16 DAVID SOLEIM

17 a witness, called for examination, having previously
18 been duly sworn, was examined and testified further as
19 follows:

20 THE COURT: Good morning, Mr. Graybill.

21 MR. GRAYBILL: Good morning, Your Honor.

22 Good morning, Mr. Soleim.

23 THE WITNESS: Good morning.

24 THE COURT: You may go ahead.

25 REDIRECT EXAMINATION

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1 BY MR. GRAYBILL:

2 Q. Mr. Soleim, yesterday, in answering some
3 questions from Mr. Bair, you talked at length about the
4 notion that fire plays a natural ecological role in
5 forest landscapes. Do you remember that testimony?

6 A. Yes.

7 Q. In a forest -- in the Glacier National Park,
8 with forests of hundreds of thousands of acres, the
9 National Park Service certainly has the luxury of
10 treating wildland fire, if it so chooses, as a natural
11 ecological part of the landscape. Isn't that true?

12 A. Where possible, yes.

13 Q. Okay. Wildland fire, however, is not part of
14 the landscape in a commercial timber forest, is it?

15 A. Generally not, other than silviculture
16 prescriptions using fire.

17 Q. Right. And so if the United States is managing
18 the Blackfeet Tribe's forest in accordance with the
19 forest management plan for the Blackfeet Tribe, 1997 to
20 2006 -- we don't need to bring this up, I am just going
21 to read it -- "to preserve the long-term productivity of
22 the land and to be committed to the policy of sustained
23 yield management for the timber," wildland fire is
24 destructive of those purposes if you are managing the
25 forest as a commercial timber operation.

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1 A. I'm not familiar with their forest management
2 plan, so I'd hate to speak to it.

3 Q. You are a fire management officer, though,
4 correct?

5 A. Yes.

6 Q. Okay. If you were a fire management officer
7 responsible for a commercial timber operation, you would
8 not consider wildland fire to be part of the natural
9 landscape of the forest that you were responsible for
10 with regard to commercial timber.

11 MR. BAIR: Objection, Your Honor. This both
12 calls for speculation and also has foundational issues.
13 Mr. Soleim has never testified that he's been a
14 commercial timber manager.

15 THE COURT: Mr. Graybill?

16 BY MR. GRAYBILL:

17 Q. Well, I'm asking in your capacity, sir, as a
18 fire management officer, you know, who is responsible
19 for a commercial timber forest --

20 It seems to me, Your Honor, if he doesn't know
21 the answer, he can say he doesn't know the answer, but
22 as a fire management officer, it would seem to me that,
23 you know, that's something he would have familiarity
24 with.

25 MR. BAIR: Mr. Soleim is not responsible for a

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1 commercial timber forest. He's responsible as the fire
2 management officer for a national park which doesn't
3 practice commercial timber harvesting.

4 THE COURT: Yes, I am going to sustain the
5 objection.

6 MR. GRAYBILL: Thank you, Your Honor.

7 BY MR. GRAYBILL:

8 Q. Mr. Soleim, the National Park Service does not
9 consider Glacier National -- the Blackfeet Forest as
10 part of the Glacier National Park ecosystem, does it?

11 A. No. We respect that boundary.

12 Q. Okay. Do you understand, as the fire management
13 officer for Glacier National Park, that the Blackfeet
14 Forest is managed for different purposes and in
15 different ways than the Glacier National Park Forest?

16 A. Absolutely.

17 Q. So, I think we talked a little bit yesterday
18 about the fact that the National Park Service does seek
19 to protect historic sites, cultural sites, park
20 facilities from wildland fire. Isn't that right?

21 A. Yes.

22 Q. And it does so, I think you testified, by
23 converting the Park's Fuel Model 10 forests around those
24 facilities and those sites to a Fuel Model 8 forest,
25 correct?

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1 A. Yes, as well as it's in our decision process on
2 how we're managing a fire that occurs.

3 Q. Okay. But I'm talking about the decision-making
4 process and the policy with regard to what I call
5 presuppression, at least presuppression in terms of fuel
6 reductions. The Park does convert FM10 forests around
7 areas it wants protected into FM -- Fuel Model 8
8 forests. Isn't that true?

9 A. We do fuels treatments around those structures.
10 Whether it's a conversion -- I know our plans say it's a
11 conversion to Fuel Model 8. Whether it really is, we're
12 trying to follow Firewise standards.

13 Q. Okay. The policy, though, says, the Glacier
14 National Park fire management policy, doesn't it say
15 that the goal is to convert the Fuel Model 10 forests
16 around these structures into a Fuel Model 8 forest in
17 order to make them less susceptible to wildland fire?

18 A. I wouldn't call that our policies. Our fuels
19 treatment plans do call for that, yes.

20 Q. Okay. It's a plan, not a policy?

21 A. Yes.

22 Q. Okay. So, if Glacier National Park is 98
23 percent designated wilderness, why is it that the
24 National Park Service has made this decision to convert
25 the FM10 forests in these areas it wants protected, to

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1 reduce fuels in those areas? Why not just let those
2 areas burn?

3 A. There's other mandates and laws in place, like
4 the National Historic Preservation Act, for historic
5 structures within -- within the Park.

6 Q. Okay. And so are you saying that if the United
7 States determines that an area has value, then the
8 United States takes measures to protect those areas,
9 including hazardous fuel reduction within the Park?

10 A. Yes, and that brings in the NEPA process and
11 also the minimum requirement analysis that we discussed
12 yesterday.

13 Q. Okay. So, I think you also discussed yesterday
14 that one of the planning or policy objectives that the
15 National Park Service follows in Glacier National Park
16 is to protect its neighbors from wildland fire, correct?

17 A. Yes. That's an objective in our fire management
18 plan.

19 Q. Okay. That includes the Blackfeet Forest,
20 correct?

21 A. Yes.

22 Q. Okay. And the means by which the National Park
23 Service of the United States does that is to suppress
24 fires, at least on the east side of the Park, in order
25 to try to prevent them from spreading across the border,

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1 correct?

2 A. Yes.

3 Q. So, why has the National Park Service, if you
4 know, based on your experience, not -- why has it not
5 decided to use fuel reduction as an additional means of
6 protecting park neighbors?

7 A. As stated in the environmental assessment that
8 we referred to yesterday, I think it's been determined
9 that those fuel treatments would likely be ineffective,
10 and the amount of damage to the resource would not
11 outweigh the potential that they would be successful.

12 Q. Okay. So, sir, when we went through the
13 discovery phase of this case, the Plaintiff asked for
14 any fire management-related documents from Glacier
15 National Park, and we received no documents indicating
16 that a NEPA analysis had been done with regard to fuel
17 reduction in the forests in order to protect the
18 Blackfeet Forest from damage by wildland fire.

19 So, you testified a second ago that it had been
20 determined that fuel breaks, fuel reduction in the
21 forest wouldn't protect the Blackfeet Forest. Was there
22 a formal NEPA analysis to determine whether or not fuel
23 reductions should be undertaken to protect the Blackfeet
24 Forest?

25 A. There was not. I believe those statements, as

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1 we discussed at deposition, were the professional
2 opinions of the contractors and fire management staff
3 that developed that EA for the fire management plan.

4 Q. Okay. And you testified at your deposition that
5 you don't know what analysis they went through in
6 determining that they didn't think a fuel break would be
7 effective, correct?

8 A. I could not find any documents to that effect.

9 Q. And isn't it true, sir, that there is no Glacier
10 Park fire plan that reflects any kind of formal
11 technical analysis of whether or not fuel reduction
12 would be effective at protecting the Blackfeet Forest?

13 A. Not to my knowledge.

14 Q. Okay. So, in order to determine to do
15 suppression to protect the Park's neighbors, like the
16 Blackfeet Tribe's forest, did the National Park Service
17 have to go through a NEPA process?

18 A. It was in the NEPA process for our fire
19 management plan as those zones were set up.

20 Q. Okay. So, in going through the NEPA process and
21 in setting up the fire management zones, it was
22 determined that suppression was a means by which Glacier
23 National Park could protect its neighbors from the
24 spread of wildland fire, correct?

25 A. Could you repeat the question?

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1 Q. Was there some sort of formal analysis that the
2 Park went through in order to determine that suppression
3 was a means that the National Park Service was going to
4 use to try to protect its neighbors from the spread of
5 fire?

6 A. I do not know of any formal analysis, no.

7 Q. Well, are there minimum tool requirements with
8 regard to suppression activities in the Park, fire
9 suppression activities in the Park?

10 A. Yes. As we discussed yesterday and Mr. Bair
11 showed that example out of one of the planning
12 documents, that minimum tool requirement is required for
13 suppression.

14 Q. Okay. So, somebody had to determine that,
15 correct?

16 A. It was covered in our NEPA document.

17 Q. So, there was a NEPA process that was undertaken
18 to determine what the minimum tool requirement would be
19 for suppression, correct? It was analyzed. That's my
20 only point.

21 A. The tools that we can use during a suppression
22 action are discussed in the fire management plan, the
23 example being that we need to have superintendent's
24 approval to use retardant in a recommended wilderness
25 and power tools. I believe I would need to refer back

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1 to the EA, as it is covered in there.

2 Q. Okay. My only point is that there was, in fact,
3 a formal analysis done to determine what the minimum
4 tool requirements would be, what the process would be to
5 use the tools to suppress a fire in the Park, correct?

6 A. There -- we have -- for -- for the fire
7 management plan, I believe we are utilizing the minimum
8 tool analysis that is used with the trails operation, so
9 for the use of chainsaws. So, there was -- there is
10 those analyses on record. I'm sorry, I'm not sure if
11 I'm understanding your question.

12 Q. Well, the NEPA process, sir, doesn't it require
13 managers, fire managers, park administrators to formally
14 and technically sit down and determine what the tools
15 are going to be -- what tools are going to be used to
16 suppress fires in Glacier National Park, under what
17 circumstances, and what tools aren't going to be used,
18 in order to minimize impact on the environment?

19 MR. BAIR: Objection, Your Honor. Mr. Graybill
20 is asking Mr. Soleim to reach a conclusion about what a
21 federal statute requires. It's calling for a legal
22 conclusion.

23 THE COURT: Well, as we had a few examples
24 yesterday, if he has an understanding of it, I think
25 that would survive.

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1 MR. GRAYBILL: That's all I want is your
2 understanding, sir.

3 THE COURT: All right.

4 THE WITNESS: Could you repeat the question
5 again? I'm sorry.

6 BY MR. GRAYBILL:

7 Q. At some point, didn't park personnel -- maybe
8 you as fire management officer -- sit down and determine
9 what minimum tool requirements were going to be utilized
10 with regard to suppression of wildland fires under what
11 circumstances? I mean, these rules had to be developed,
12 and wasn't that done through some sort of formal
13 analysis?

14 A. I don't know and I don't know of a formal
15 analysis to that. Generally, as far as what tools we
16 use on any fire, it's a case-by-case basis, and we
17 attempt to --

18 Q. And so --

19 A. -- use minimum impact suppression tactics
20 wherever possible.

21 Q. So, is it possible to use bulldozers to suppress
22 fires on the east side of Glacier National Park, within
23 the Park?

24 A. I believe our environmental assessment -- I
25 would have to look through it for the exact language.

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1 I'm not sure if that has the same statement as, like,
2 retardant with only superintendent's approval.

3 Q. Okay. And I'm not sure I understand your
4 answer. Is it -- is it possible, with the
5 superintendent's approval, to use bulldozers in the Park
6 to suppress fire?

7 A. I would need to reference the fire management
8 plan.

9 Q. Okay. So, you testified yesterday that you -- I
10 think you said that it might take a lifetime to perform
11 the fuel treatments that the Plaintiff has recommended
12 in this case based on NEPA minimum tool requirements.
13 Do you remember that testimony?

14 A. Yes.

15 Q. Okay. There was no analysis, no NEPA analysis
16 and no other formal analysis, of what it would take or
17 how to perform fuel reduction in the forest adjacent to
18 the Blackfeet Reservation. Isn't that true?

19 A. Correct.

20 Q. Do you know how many acres in Glacier National
21 Park is recommended for treatment under the Plaintiff's
22 plans in the area where the Red Eagle Fire crossed?

23 A. I would have to do the math. I don't have it
24 off the top of my head.

25 Q. So, it would be 1600 acres.

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1 A. Okay.

2 Q. So, based on your experience as a fire
3 management officer, over a decade, would it be possible,
4 using equipment to thin the forest, to perform fuel
5 treatment reduction in the Glacier Forest adjacent to
6 the Blackfeet Forest using the type of equipment you
7 use, perhaps, to protect park assets?

8 A. For the area where the Red Eagle hit or for the
9 entire boundary?

10 Q. Just for that 1600 acres.

11 A. I would -- I don't know. I would need to look
12 at what our production rates are and our current fuels
13 treatments and kind of project that out.

14 Q. Okay. So, you don't know one way or the other
15 whether it would take a lifetime to do that.

16 A. Correct.

17 Q. All right. Do you understand that the fuel
18 reduction -- the landscape fuel reduction plans that the
19 Plaintiff proposes in this case do not call for fuel
20 reduction along the entire length of the border?

21 A. Could you repeat your question? I'm sorry.

22 Q. What do you understand -- why don't you just
23 tell me what you know about the fuel reduction --
24 landscape fuel reduction projects that the Plaintiff has
25 proposed in this case.

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1 A. I know that there was -- it's proposed a
2 one-mile-wide treatment along the boundary.

3 Q. And do you understand that's the -- along the
4 entire boundary?

5 A. I have not read the details of that.

6 Q. Do you -- have you heard that, in fact, the
7 proposal is just in those areas along the boundary that
8 are adjacent to Fuel Model 10 forests on the Blackfeet
9 Reservation?

10 A. I have not read those details in the proposal.

11 Q. Okay. Your opinion -- and I'm not talking about
12 the comment in the draft environmental assessment that
13 we looked at yesterday -- but you testified yesterday
14 that it was your opinion that a fuel break in the area
15 where the Red Eagle Fire burned through would not have
16 been effective. Do you remember that?

17 A. Yes.

18 Q. Okay. You don't have the particulars of the
19 kind of fuel break that the Plaintiff is proposing,
20 other than it's a one-mile-wide, five-mile-long fuel
21 break, correct?

22 A. Correct.

23 Q. And your opinion, was it based on computer
24 modeling that you have done on fire behavior in that
25 area?

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1 A. No. It was based on my being there July 29th,
2 2006, and seeing the fire behavior of the Red Eagle
3 Fire.

4 Q. Okay. Was it based on anything other than your
5 observation of the Red Eagle Fire?

6 A. And professional experience in fire management.

7 Q. So, is it your contention that there is no fuel
8 reduction plan that would have protected the Blackfeet
9 Forest from the Red Eagle Fire?

10 A. I can think of none.

11 Q. Okay. So, is it your contention, then, based on
12 your experience as a wildland fire officer, that the
13 Blackfeet Forest was not protectable from a
14 high-intensity fire in these FM10 forests on the Glacier
15 side when the wind was blowing like it was at the time
16 of the Red Eagle Fire?

17 A. From the fire behavior that I saw on the Red
18 Eagle Fire, I believe that's correct, yes.

19 Q. Okay. You've done, again, no formal analysis to
20 determine that, correct?

21 A. Correct.

22 Q. So, based on your experience as a fire
23 management officer, if you're responsible for a forest
24 and you're asked to protect that forest or a portion of
25 that forest and you know that it isn't protectable, what

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1 is your obligation with regard to what you tell your
2 bosses about that? Do you tell them it's not
3 protectable?

4 A. I would tell them that's why we try to catch the
5 fires small.

6 Q. Okay. Well, that's not quite my question.

7 My question is that if you, as a fire management
8 officer, are in a position where you're required to
9 protect a forest, and you make a decision, based on your
10 experience -- without formal analysis -- but your
11 experience that the forest is not protectable, is it
12 your obligation to tell your bosses that it's not
13 protectable?

14 A. I've never been asked that by my bosses, but I
15 believe that they understand that some fires are not
16 going to be caught.

17 Q. Some fires aren't going to be caught, but it
18 sounds like there are forest areas that are simply not
19 protectable. That's your testimony, correct?

20 A. In some fire behavior conditions, yes.

21 Q. Yeah. And if your bosses give you the
22 assignment to protect a forest or a particular portion
23 of a forest and you determine that it's not protectable,
24 is it your obligation to tell them that, or do you just
25 assume that they know it?

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1 A. I'm not sure where the examples of that have
2 come up in my past experience. I don't know the answer
3 to that.

4 Q. Sir, I'm not asking for an example. I'm asking
5 for your practice, what your practice would be in that
6 circumstance. I mean, you have been a fire management
7 officer for I think over a decade.

8 A. I'm sorry. Can you repeat the question again?
9 I'm confused.

10 Q. Sure.

11 So, if, as a fire management officer, you are
12 assigned to protect a forest or a particular portion of
13 a forest by your bosses and you come to the conclusion
14 that because of the size of that forest or the fuel
15 models in that forest it's simply not protectable, there
16 is no fuel treatment that can be done to protect it, is
17 it your obligation to tell your bosses that?

18 A. We would have those discussions with the boss.
19 I've never been assigned protection of a forest, so...

20 MR. GRAYBILL: That's all I have, Your Honor.

21 THE COURT: All right, thank you.

22 Any recross?

23 MR. BAIR: Very briefly, Your Honor.

24 RE CROSS EXAMINATION

25 BY MR. BAIR:

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1 Q. Good morning, Dave.

2 A. Good morning.

3 Q. Mr. Graybill asked you some questions earlier
4 about whether fire is a desirable part of the management
5 of a commercial forest. Regardless of whether fire is a
6 planned part of the management goals for any given
7 forest, is it sometimes just an unavoidable part of the
8 ecosystem?

9 A. Yes.

10 Q. So, even if your goal is to exclude fire from
11 any given forest stand, as an ecological fact, it may be
12 impossible to do so.

13 A. Yes.

14 Q. You discussed fuel treatments the Park performs
15 around certain structures and historical sites. That
16 can include an awful lot of stuff, so this may be a
17 tough question to answer, but generally speaking, how
18 large are those fuel treatments?

19 A. Without referring to the treatment specs -- the
20 specifications that we have in those plans, the extent
21 of that is, I believe, 400 to 500 feet out from those
22 structures.

23 Q. Okay. So, in acreage, roughly speaking, what
24 would we be talking about?

25 A. Well --

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1 Q. 1500 acres?

2 A. No, I'm sorry. Generally with treatments we're
3 talking under ten acres.

4 Q. Okay. And so even when those ten acres of
5 treatment around a given structure are implemented, is
6 it possible that a severe enough fire could still
7 destroy that structure?

8 A. Absolutely.

9 Q. And does that sometimes happen despite the
10 treatment of -- the presence of fuel treatments?

11 A. Yes, there are examples of that. Since the Red
12 Eagle Fire, in 2015, we lost a structure that we had
13 done treatments around.

14 Q. Is the National Environmental Policy Act, NEPA,
15 the source for the Park's minimum tools requirement?

16 A. No.

17 Q. No. The NEPA process is used to help the public
18 and the agency understand environmental impacts, isn't
19 it?

20 A. Yes.

21 Q. And it's used to understand the environmental
22 impacts of proposed major federal actions.

23 A. Correct.

24 Q. So, if a given action isn't being brought
25 forward as an alternative, is a NEPA process -- a NEPA

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1 analysis performed for that proposal?

2 A. No.

3 Q. Okay. And --

4 A. If I could go back one, as far as acreage of
5 some of the treatments, we are looking at maintenance
6 treatment around the St. Mary compound, and that's about
7 30 acres, I believe. I thought of that.

8 Q. Are you aware of any treatments within the Park
9 larger than that?

10 A. I believe our treatment around the West Glacier
11 Barn that we're currently undertaking is about 40 acres,
12 and I would guess around the -- the West Glacier
13 Compound, it's probably pushing that or larger.

14 Q. And generally speaking, are those structures,
15 like St. Mary's and West Glacier, within the portions of
16 the Park that are recommended wilderness?

17 A. Those areas would be outside of recommended
18 wilderness.

19 Q. And so the minimum tools requirement doesn't
20 apply to those areas.

21 A. Not the minimum tool analysis, but we would
22 still be going through an internal compliance process.

23 Q. Mr. Graybill asked you about how long it would
24 take to implement this theoretical 1500-acre treatment.
25 Once the treatment is implemented, would that be the end

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1 of it or would maintenance be required?

2 A. We're generally returning to those areas in five
3 to six years for maintenance.

4 Q. And what does that maintenance involve?

5 A. After treatments, frequently we have windfall in
6 there, so we're going in and clearing those out, new
7 stems, brush coming in, young conifer, thinning those
8 back out again.

9 Q. And if an understory burn were part of the
10 initial treatment, could that also be part of the
11 maintenance periodically?

12 A. It could be, yes.

13 Q. And could that potentially cause additional tree
14 mortality if it were performed again as part of the
15 maintenance?

16 A. Yes.

17 Q. So, Mr. Graybill asked you about the concept
18 that any given forest could be not protectable, and you
19 said that that hasn't really come up in your practice as
20 the forest management officer, but is it the case that
21 any given fire can simply be unstoppable?

22 A. Until weather and fuels conditions change, yes.

23 Q. Okay. So, even if a fuel break, for instance,
24 could be effective against certain fires under certain
25 conditions, it might not be effective against an even

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1 more severe fire.

2 A. Correct.

3 Q. You mentioned earlier in your discussion with
4 Mr. Graybill that the Park does recognize that one of
5 its goals is to protect its neighbors, but in doing so,
6 does the Park also have to balance that against its
7 other goals?

8 A. Certainly.

9 Q. And do those include protecting wildlife?

10 A. Yes.

11 Q. Protecting ecological values?

12 A. Sure.

13 Q. Protecting recreational use?

14 A. Yes.

15 Q. And so the Park's goal is to balance many
16 different interests.

17 A. Absolutely.

18 Q. Is there anything you would like to clarify
19 about your testimony today or yesterday, Mr. Soleim?

20 A. No, only your -- the hypothetical question that
21 you posed about if there were no boundary there, would
22 we treat the Park differently. I would follow that up,
23 as I discussed with Mr. Graybill, we do recognize
24 that -- that boundary, as well as the international
25 boundary with Parks Canada, Alberta and British

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1 Columbia, and our private -- and private lands within
2 the Park, and those all affect our fire management
3 options and program.

4 Q. That's a lot of interests to balance.

5 A. Yes, sir.

6 Q. Thank you, Mr. Soleim.

7 THE COURT: All right. Mr. Soleim, thank you
8 very much for your testimony. You may step down.

9 THE WITNESS: Yes, sir.

10 MR. BAIR: Just to clarify, Your Honor, we may
11 recall Mr. Soleim as part of our case in chief. We
12 haven't fully finalized our witness order.

13 THE COURT: Very well.

14 MR. ANDERSON: Your Honor, the Plaintiff calls
15 Tyson Running Wolf.

16 THE COURT: All right.

17 Good morning, sir.

18 MR. RUNNING WOLF: Good morning.

19 THE COURT: Please raise your right hand.

20 Whereupon--

21 TYSON RUNNING WOLF

22 a witness, called for examination, having been first
23 duly sworn, was examined and testified as follows:

24 THE COURT: Please be seated.

25 THE WITNESS: Thank you.

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1 DIRECT EXAMINATION

2 BY MR. ANDERSON:

3 Q. Mr. Running Wolf, would you please state your
4 name for the record.

5 A. Tyson T. Running Wolf.

6 Q. And where do you live?

7 A. I live in Browning, Montana.

8 Q. And how long have you lived there?

9 A. I've lived there for 42 years.

10 Q. And is that most of your life?

11 A. That's most of my life, yeah.

12 Q. Mr. Running Wolf, would you discuss with us your
13 education.

14 A. I have a -- I graduated from the Browning High
15 School, and I went to the University of Montana and have
16 a forest resource management degree out of there.

17 Q. And after you -- when -- what year was -- did
18 you receive your forestry degree?

19 A. 2001.

20 Q. 2001. After you received your forestry degree,
21 did you seek employment in forestry?

22 A. I did.

23 Q. And in what -- and did you become employed?

24 A. I did. I did -- in 2002, July, I became the
25 wildland fire operations specialist for the Bureau of

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1 Indian Affairs.

2 Q. And where was that located?

3 A. That was located in Browning, Montana.

4 Q. And what were your responsibilities?

5 A. My responsibilities was to oversee suppression
6 and assist with prevention and the fuels program.

7 Q. And could you generally describe the nature of
8 the fuels program at that time?

9 A. When I came on, the fuels program was kind of a
10 new program with the Bureau of Indian Affairs at
11 Blackfeet Agency. They had just employed a new employee
12 who had -- who was just starting his career as a fuels
13 specialist, Ray Hart, and he was implementing some past
14 projects with the assistance of the Blackfeet Tribe.

15 Q. When you say "implementing past projects," what
16 do you mean by that?

17 A. What I mean is that there was projects developed
18 by the past forester, Andrea Gilham, and they were ready
19 to be implemented, and Ray was -- had them projects on
20 the table, and he was going to be implementing them
21 projects.

22 Q. When you say -- were these projects developed by
23 the BIA or by the Tribe or who?

24 A. They were developed by the BIA.

25 Q. Did the -- did the BIA consult with the Tribe in

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1 the development of these projects or was -- or did the
2 BIA solely develop the projects?

3 A. The BIA developed the projects.

4 Q. Did you work on these projects?

5 A. I didn't work on the projects.

6 Q. Did you -- did you assist in administering the
7 projects at all?

8 A. The only thing I assisted was going out in the
9 field and looking at the process -- at the progress of
10 what the Tribe was doing on the projects.

11 Q. In the course of that work, did you develop an
12 understanding of the nature of the relationship between
13 the Tribe and the BIA in the course of fuels management
14 and forest management?

15 A. Yes, I did.

16 Q. Tell us what your understanding of the nature of
17 that relationship was.

18 A. My understanding was that the BIA, Blackfeet
19 Agency fuel specialist, would have a project developed
20 in past quarters, develop a resolution, bring it down to
21 the Tribe, and get the resolution passed to have the
22 Tribe implement the projects.

23 Q. Did you observe that process yourself?

24 A. I did.

25 Q. Would the -- would the resolution be prepared by

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1 the BIA?

2 A. Yes.

3 Q. Would it be prepared -- would the resolution --
4 did the BIA have Blackfeet Tribal Council -- Business
5 Council letterhead in order to prepare those
6 resolutions?

7 A. Yes, they did.

8 Q. And they prepared them at their office?

9 A. Yeah. They prepared them up at the Bureau of
10 Indian Affairs office, Blackfeet Agency.

11 Q. And then -- and then what happened? Did they
12 make an appointment with the Tribal Council or did they
13 just show up?

14 A. Well, once the project was ready to go, they
15 would consult with Robert Mad Plume to ask when they
16 could actually meet with the Tribe. They would go down
17 with -- sometimes with Robert Mad Plume or without
18 Robert Mad Plume and present these to the Tribe. They
19 would tell them these are the projects we need to have
20 passed by resolution.

21 Q. Was there any discussion by the Tribal Council
22 that you observed?

23 A. No.

24 Q. Was it, for lack of a better term, more or less
25 a rubber-stamp process?

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1 A. Yeah. They just -- they just passed the
2 resolutions. There was hardly any discussion. There
3 was no technical person for the Tribe that would say
4 they needed it. The only thing they would ask is about
5 employment, how many people would be employed and if
6 this is going to be Blackfeet preference.

7 Q. In your education in the forestry program at the
8 University of Montana, did you develop some
9 understanding of the strategy for developing fuels
10 projects?

11 A. Not necessarily. I didn't -- we didn't have a
12 big fuels program that was at the University of Montana.
13 We just had a basic fire management course of what fire
14 management was about, but no strategies or specific plan
15 development at the University of Montana.

16 Q. Did you -- in the course of your work at the
17 BIA, did you learn about strategy?

18 A. What I learned about was that -- well, I did
19 learn a little bit about strategy on -- on reducing
20 fuels from a certain fuel loading to a lower fuel
21 loading so that we wouldn't have -- we could take the
22 fire from the canopy and get it to the -- to the forest
23 floor to suppress it.

24 Q. And where did you learn that?

25 A. I learned that in -- actually, I learned that on

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1 Chief Mountain Hotshots, on watching fire behavior and
2 doing suppression tactics, where we would go to urban
3 interface areas throughout the United States that had
4 fuels treatments done, and we would see the transition
5 from wildland-urban interface areas to heavier fuel
6 loading and seeing the ability to suppress fires on
7 them.

8 Q. So, you worked as a Hotshot on a -- on a fire
9 suppression team. Is that right?

10 A. I did. I worked on Chief Mountain Hotshots.

11 Q. And tell us a little bit about that.

12 A. Well, when I was going to the University of
13 Montana, I would pull detail with Chief Mountain
14 Hotshots from '98, '99, went out with them in 2000, also
15 was on the crew full-time the first part of 2002 to July
16 of 2002.

17 Q. Is the Chief Mountain Hotshots, is that a -- is
18 that a firefighting crew from the Blackfeet Tribe?

19 A. Yeah. It's a BIA-funded Hotshot crew that's --
20 that the Tribe 638 'd back in 19 and -- what is that,
21 2004, 2005, and -- a 20-man crew, with superintendent,
22 and they have -- and they're a highly elite firefighting
23 crew, type 1.

24 Q. And do they travel all over the United States
25 and --

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1 A. Yeah. They are a national resource that travels
2 all over the United States.

3 Q. Okay. So, is that where you learned about fuels
4 strategy?

5 A. Suppression strategy --

6 Q. Okay.

7 A. -- and fuel -- and different fuel types and fuel
8 loading.

9 Q. Tell us what you learned there.

10 A. Well, I learned that if you have heavier fuels,
11 you are not going to be able to suppress fire. If you
12 have lower fuels, you are going to be able to suppress
13 fire, and different tactics.

14 Q. In the course of your working with the BIA --
15 and how many years did you work with the BIA?

16 A. July 2002 until December of 2015 -- 2005. I'm
17 sorry.

18 Q. Okay. During that period of time, did you
19 observe the fuels maintenance projects that took place
20 there?

21 A. I did.

22 Q. Did you -- did you see -- did you have any
23 discussions with the -- with the BIA's forest manager
24 regarding any strategy regarding these fuels projects?

25 A. I did with the fire management officer, but I

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1 also did with the fuels specialist. I would ask him why
2 we were putting fuels projects where they were -- where
3 they were located. I didn't understand the rhyme or
4 reason of why we had fuels projects that were where they
5 were at. I just didn't know. I'd ask him, what's the
6 reason we're putting a fuels project here?

7 And he would say, well, it's close access to the
8 road or it's tribal land. It doesn't butt up to an
9 allotment of a specific individual landowner. I said,
10 why wouldn't we be involved in that situation of using
11 them allotments? He says, it's a little harder to get
12 the project put in place because there's a lot more work
13 and a lot more signatures that need to be in place. If
14 we just have the Tribe's lands, then that makes the
15 projects go by a little faster and we can employ the
16 people.

17 Q. What seemed to be the priority for these fuel
18 projects during your time at the BIA?

19 MR. BAIR: Your Honor, this entire line of
20 questioning seems to call for inadmissible hearsay. We
21 would object.

22 THE COURT: Mr. Anderson?

23 MR. ANDERSON: At that time, Mr. Running Wolf
24 was an employee of the BIA. He can testify about what
25 seemed to be the strategy regarding these fuel breaks at

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1 that time.

2 MR. BAIR: But the specific testimony he just
3 related is clearly an out-of-court statement being
4 related for the truth of the matter asserted. We would
5 ask that it be struck.

6 MR. ANDERSON: If it's a statement by the BIA,
7 it's not hearsay under 801(2)(d), I think is the
8 subsection we're talking about.

9 THE COURT: I'll overrule the objection.

10 MR. ANDERSON: Thank you.

11 BY MR. ANDERSON:

12 Q. You may proceed, Mr. --

13 A. Can you repeat your question, Larry?

14 Q. I guess I'd have to ask the court reporter to
15 repeat the question.

16 I can -- I can start over.

17 THE COURT: Do you want to just ask a new
18 question?

19 MR. ANDERSON: Sure.

20 THE COURT: All right.

21 BY MR. ANDERSON:

22 Q. Mr. Running Wolf, during your tenure at the BIA
23 in the forestry office in Browning, did you have an
24 opportunity to observe whether or not there appeared to
25 be any strategy with respect to the fuels projects that

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1 were undertaken during your time there?

2 A. No.

3 Q. What appeared to be the purpose of the fuels
4 treatments that were undertaken during your time there?

5 A. To employ tribal members.

6 Q. Was there any -- did there seem to be any
7 purpose with respect to protecting the Tribe's forests
8 from wildfire originating in Glacier National Park?

9 A. No.

10 Q. I'm showing you what is in evidence as
11 Defendant's Exhibit 124. I think we can put this on an
12 easel if -- and we can probably project it as well. Can
13 you see that?

14 A. Yep.

15 Q. Is this -- is this a summary of the fuel
16 projects that you are aware of for the -- for about ten
17 years before the Red Eagle Fire?

18 A. Yeah. Them are the projects.

19 Q. Do you see -- did you see any strategy, looking
20 at that -- at that map?

21 A. I didn't see any strategy, and I asked about
22 that.

23 Q. And who did you ask?

24 A. I asked Andrea Gilham and Ray Hart why the
25 projects are so far from the border.

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1 Q. And what did they say about --

2 MR. BAIR: Objection. Again, this calls for
3 hearsay.

4 MR. ANDERSON: This is not hearsay under
5 801(2)(d) or -- I don't remember the exact subsection.

6 THE COURT: I think counsel is correct, that
7 since these statements come from the BIA, that they're
8 admissible.

9 MR. BAIR: Thank you, Your Honor.

10 THE WITNESS: The projects, why we weren't
11 working closer to Highway 89 on the projects of the
12 Divide Creek area, and if we are trying to protect some
13 of our commercial timberland that's up on the St. Mary's
14 Ridge.

15 BY MR. ANDERSON:

16 Q. And what did they say -- what did Ray Hart or
17 Andrea Gilham say to you when you questioned them about
18 this?

19 A. They didn't make any comment on it.

20 Q. Did they respond at all?

21 A. No.

22 Q. Did they -- that seems strange. They didn't --
23 they didn't answer your question?

24 A. No.

25 Q. Did you make a formal inquiry about this?

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1 A. No, I never.

2 Q. Okay. At some point did you leave the employ of
3 the BIA?

4 A. Yes, I did.

5 Q. And was there a reason you left the employ of
6 the BIA?

7 A. It was for -- one of my main reasons for leaving
8 was because we just didn't communicate with the Tribe.
9 We didn't talk to them. We would -- we were in a time
10 when we were trying to -- I was trying to progress my
11 own career a little bit, and I wanted to have more fire
12 behavior knowledge. I actually was going to go to a
13 course, and I was denied going to the course. So, I
14 took another approach. I resigned from the BIA.

15 Q. Mr. Running Wolf, what has been your employ
16 since leaving the BIA?

17 A. My employment has been with the Blackfeet Tribal
18 Business Council, and I went to a -- for a short time
19 with FEMA, for six months right after I left the Bureau
20 of Indian Affairs.

21 Q. And what did you do there at FEMA?

22 A. Took 600 Blackfeet down there to help with Rita
23 and Katrina. I was the primary contact in the
24 leadership for them down there.

25 Q. And you assisted FEMA in the --

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1 A. The recovery efforts of Katrina, Rita in
2 Louisiana, Florida, Texas, and Alabama.

3 Q. Okay. Mr. Running Wolf, what I'd like to do now
4 is ask you about the forest as a habitat. Do you use
5 the forest yourself?

6 A. I use the forest.

7 Q. Tell us how you use the forest.

8 A. Well, I -- I'm a hunter. I also go up there for
9 spiritual knowledge. I'll go up there and gather wood
10 for my family and also for the input from the fire and
11 forestry programs on what's going on up there in the
12 forest. So, I go up there and site-visit periodically
13 now with them.

14 Q. Since the Red Eagle -- I mean, is what you do in
15 the forest, is that -- is that common among the
16 Blackfeet people?

17 A. Yes.

18 Q. Since the Red Eagle Fire, how has the fire
19 itself affected your ability to use the forest habitat?

20 A. Well, the use of going up there and getting
21 spiritual knowledge in that particular area has been --
22 has been stopped. I don't go there for that -- in that
23 particular area anymore for the stuff I need in the
24 societies that I'm a part of in our cultural knowledge
25 ways. There's -- there is certain things that we do go

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1 up there and we used in the past in that particular area
2 that we can't access anymore.

3 Also, we go up there for family gatherings that
4 we don't -- we don't do that anymore. We go to other
5 places that are on the Reservation. We're kind of
6 displaced because a lot of the families are clan-based
7 families that use specific areas over durations of time,
8 and that area was part of one of our clan areas that we
9 used, that we just don't use anymore. So, we kind of
10 were displaced by the fire situation.

11 Q. Okay, one minute.

12 (Counsel conferring.)

13 BY MR. ANDERSON:

14 Q. Mr. Running Wolf, the societies that you
15 mentioned there that you -- that use the forest habitat
16 with you, could you -- could you tell us a little bit
17 more about that or is that something that is -- that you
18 would rather not talk about?

19 A. I will talk about it. Most like -- a lot of the
20 information that we have in the use up there in the
21 Badger-Two Medicine -- or, I'm sorry, the Red Eagle Fire
22 is privileged information, privileged information not
23 through the sense that it's secret, but it's privileged
24 because you have to have certain rights to be doing
25 certain things in certain areas at certain times during

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1 certain -- for certain objects. I never understood that
2 at first because I wasn't part of the higher societies
3 that I am now.

4 So, there has to be certain elements that are
5 there, of cover type, of the way of the wind, the aspect
6 of where you're at in that land, meaning where your
7 aspect of where you're actually -- where the sun is
8 hitting. And this is really hard, I'm sorry, it's
9 tough, because in a sense, we're not supposed to talk
10 about it, but this is really important to me.

11 When we go up there in harvest for our
12 ceremonies, the trees have to be a certain diameter,
13 they have to be a certain age class, and that was
14 affected, because we have to take them certain trees to
15 help all the people when we're up there during our
16 ceremonies and during our spiritual encampments.

17 Q. Okay.

18 I have no further questions, Your Honor.

19 THE COURT: All right.

20 Cross examination?

21 CROSS EXAMINATION

22 BY MR. BAIR:

23 Q. Good morning, Mr. Running Wolf.

24 A. Hello.

25 Q. You mentioned earlier that you didn't receive

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1 much formal education in the use of fuel treatments. Is
2 that right?

3 A. That's correct.

4 Q. Are you a qualified expert in designing or
5 implementing fuel treatments?

6 A. No.

7 Q. Are you familiar with the fuel models described
8 in Hal Anderson's 1982 article --

9 A. Yes.

10 Q. -- the 13 fuel models?

11 A. Yep.

12 Q. And just to make sure we understand each other,
13 are those fuel models used to describe surface and
14 ground fuels?

15 A. They are.

16 Q. Are you familiar, generally speaking, with what
17 fuel conditions are present in the Blackfeet Tribal
18 Forests?

19 A. I am.

20 Q. Around certain areas within the wildland-urban
21 interface, are there areas of Fuel Model 8?

22 A. There is.

23 Q. And those were implemented through fuel
24 treatment projects?

25 A. Some of them were actual stands of Fuel Model 8.

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1 Some are Fuel Model 10.

2 Q. Okay. Let's talk about the trees in the
3 forests. Could you tell me what the most common tree
4 species are in the Blackfeet Tribal Forests?

5 A. Yes. Lodgepole pine, Douglas fir, Engelmann
6 spruce, and subalpine fir.

7 Q. Is there any ponderosa pine present?

8 A. No.

9 Q. Would you describe the Blackfeet Tribal Forest
10 as subalpine lodgepole forests?

11 A. Yes.

12 Q. Earlier you discussed conversations that you had
13 with folks inside BIA about fuel treatment planning,
14 but, again, you're not qualified to design fuel
15 treatments, are you?

16 A. I can actually put the task orders and plans
17 together, but I would need technical assistance from
18 other individuals to help me approve it and also to
19 verify it, a verified plan.

20 MR. BAIR: We have no further questions. Thank
21 you, Mr. Running Wolf.

22 THE WITNESS: Thank you.

23 THE COURT: Anything further, Mr. Anderson?

24 MR. ANDERSON: No, sir.

25 THE COURT: All right.

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1 Mr. Running Wolf, thank you very much for your
2 testimony. You may step down.

3 THE WITNESS: Thank you.

4 MR. ANDERSON: The Plaintiff calls Darrell
5 Schulte.

6 MR. BAIR: Before examining this witness, Your
7 Honor, the United States had moved in limine to exclude
8 Mr. Schulte's expert testimony. The Court denied that
9 motion without prejudice and indicated we could bring it
10 up again at trial. We wish to hereby move again to
11 exclude Mr. Schulte's expert testimony under the Daubert
12 standard. If it would be helpful for the Court, I have
13 printed copies of our prior motion.

14 THE COURT: Mr. Schulte, would you excuse
15 yourself from the courtroom while we discuss this
16 subject, and we will call you in a few moments.

17 (Mr. Schulte excused.)

18 THE COURT: All right. Please go ahead,
19 Mr. Bair.

20 MR. BAIR: May I approach the Bench with copies
21 of the motion, Your Honor?

22 THE COURT: Sure.

23 MR. BAIR: Our basis for this motion is the same
24 basis upon which we moved in limine. Mr. Schulte's
25 opinions lack any reliability and any relevance to the

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1 facts of this case. Through the two depositions
2 Mr. Schulte provided, he admitted that his modeling
3 differs substantially from his proposal for the fuel
4 break. He has omitted perhaps the most significant part
5 of that fuel break, the proposal to thin trees to a 14-
6 to 20-foot spacing, from a natural condition where the
7 trees grow nearly abutting each other.

8 He has admitted that he started the fire at a
9 spot nearly two miles away from where the actual fire
10 started and in a spot that does not accord with what he
11 provided in his initial expert reports as a graphical
12 representation of where his simulated fire started. He
13 admits that his simulated fire reaches the border
14 between Glacier National Park and the Blackfeet
15 Reservation at a time completely different from when the
16 actual fire did, and he has now admitted that he wasn't
17 even attempting to model the Red Eagle Fire itself. He
18 was attempting to model a fire that he describes as
19 similar but admits could differ in significant ways from
20 the Red Eagle Fire.

21 For those reasons, based on Rule of Evidence 702
22 and based on the Daubert standard, we contend that
23 Mr. Schulte's opinions both lack reliability that will
24 guide the Court in its judgments and also lack any
25 relevance to the facts presented to this Court.

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1 THE COURT: Thank you, Mr. Bair.

2 Mr. Anderson, would you like to respond?

3 MR. ANDERSON: Your Honor, we were preparing a
4 response to the -- to the motion at the time the Court
5 denied -- prematurely denied -- denied the motion.
6 Basically, our position is Mr. Schulte uses the modeling
7 program and programs, computer modeling, in his
8 business, in his work. He's used it historically when
9 he was a fire management officer for the Beaverhead-
10 Deerlodge Forest, and he used it in the same way that he
11 uses it here.

12 The question in Daubert is whether or not --
13 whether or not the expert's opinion is based on -- is
14 based on a reliable methodology. The question in this
15 case is whether or not the methodology he used is
16 reliable. He used a computer program that all parties
17 recognize is a modeling program that's used in the
18 forest management and fire behavior and the fuels
19 management profession. He used it appropriately, and
20 that's not the question. That hasn't been attacked.

21 So, the question is whether or not he applied
22 the data appropriately. Well, what Mr. -- what
23 Mr. Schulte's hypothesis is is -- he was testing his
24 hypothesis with this computer modeling, and the
25 hypothesis is that a large wildfire like the Red Eagle

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1 Fire, with appropriately placed fuel breaks, can -- can
2 reduce the heat of the fire, reduce the flame lengths of
3 the fire, reduce the flame lengths to -- from large
4 numbers, from, like, 100 to 150 feet, to one to two
5 feet, and thus enable suppression efforts to be applied
6 to a fire such as this.

7 Now, with respect to the specific data in
8 question, frankly, it's the United States that has the
9 information incorrect. The criminal investigation
10 record shows when the fire started. Mr. Schulte started
11 the fire on the day the criminal -- the criminal
12 investigation indicates it started. It blew up two days
13 later, not -- not -- and that's when Mr. Schulte --
14 Mr. Schulte started the fire on July the 26th. The fire
15 blew up on the 28th. So, he started it on the right
16 day. That may be a subject of dispute, but that's a --
17 you don't dispute -- you don't -- you don't exclude
18 someone just because there's a dispute on specific
19 foundational data. That can be cross examined.

20 With respect to the location of the fire, the
21 criminal investigation file shows that there -- that
22 they cannot determine the location of the fire. So,
23 again, if you're -- if you -- if you have a dispute over
24 the data, that goes to the trier of fact as to what is
25 appropriate, but the methodology here is beyond dispute.

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1 No one is disputing the fact that Mr. Schulte properly
2 used, in his supplemental modeling, the program.

3 Now, he's doing what any fuels manager and
4 treatment forest manager does when they're assessing a
5 problem and how to deal with it, and that's what he did
6 in this case. So, to suggest that this is a Daubert --
7 he ought to be thrown out on Daubert, we ought to at
8 least hear his evidence before we do that and before we
9 even consider that. I frankly think the way you handled
10 this originally was the appropriate way to do that. You
11 know the Rules of Evidence, obviously, and you can apply
12 them appropriately. We think that is the way you ought
13 to proceed. That's what we assumed; otherwise, we would
14 have written -- we would have written a specific
15 reply -- response brief to their motion.

16 THE COURT: All right. Thank you, Mr. Anderson.

17 I am going to hear the testimony of Mr. Schulte.
18 I think that just because the United States disagrees
19 with his position or his testimony or his underlying
20 assumptions, the existence of such a disagreement is not
21 a basis to exclude the testimony. You'll have a full
22 opportunity on cross examination to challenge his
23 testimony, and I think I'm in a fairly capable position
24 of deciding what the weight and credibility of the
25 witness' testimony should be. It's pretty --

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1 MR. BAIR: It's --

2 THE COURT: Excuse me, sir?

3 MR. BAIR: I'm so sorry, Your Honor.

4 THE COURT: It's pretty clear to me that he's
5 put in a great amount of time on this case. I started
6 seeing the Schulte documents a long time ago. The
7 Plaintiff has invested a lot of time and effort in
8 developing his position, and I think it's only
9 appropriate that we hear what he has to say.

10 MR. BAIR: May I ask for one limiting
11 instruction, Your Honor?

12 THE COURT: Sure.

13 MR. BAIR: Mr. Schulte has submitted two expert
14 reports in this case, the first of which contained four
15 modeled scenarios; the second, his supplemental report,
16 contained two modeled scenarios. The Plaintiff
17 indicated in a filing in June of this year, ECF Number
18 91, that Mr. Schulte did not rely on the first three
19 models in his first report as the basis for formulating
20 his opinion. We've relied on that statement from the
21 Plaintiff, and we would ask that Mr. Schulte not be
22 allowed to present testimony based on those first three
23 models.

24 THE COURT: Mr. Anderson?

25 MR. ANDERSON: Well, what Mr. Schulte was doing

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1 in the development of all of his models was -- was what
2 any scientist does. It's a trial and error process, and
3 we ought to be able to discuss the trial and error
4 process, what factors -- what factors work, what factors
5 don't work. That's what could have been done -- our
6 basic position in this case is that's what could have
7 been done before the Red Eagle Fire but wasn't.

8 All he's doing is working through the problem.
9 How do we deal with this problem and how -- what --
10 what -- can we solve it or not? That's what he's doing.
11 And those first three models -- frankly, the first four
12 are simply that cerebral process, and that's certainly,
13 it seems to us, appropriate for the Court to understand
14 that cerebral process.

15 MR. BAIR: Our basis for this request is not
16 Mr. Schulte's methodology but it's our ability to rely
17 on the Plaintiff's representations. ECF Number 91 at
18 page 8, which is paginated at the bottom as page 4, the
19 Plaintiff described those first three models and then in
20 parentheses described them as "the ones he ultimately
21 did not rely on in formulating his opinions."

22 Later on on that page, they say that the
23 settings that he used for those first three models are
24 not relevant to his opinions, and we believe it would be
25 prejudicial to allow him to present testimony based on

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1 those first three models now.

2 THE COURT: Well, I am going to deny that
3 request at least for the time being. I want to hear the
4 whole story here. I want to get it all out on the
5 table. I think history has shown me that that's the
6 best way to be able to decide a case. I need to
7 understand everything that's going on, and then I'll
8 decide what weight and credibility to give to the
9 witness' testimony.

10 MR. BAIR: Thank you for your consideration,
11 Your Honor.

12 THE COURT: All right.

13 Let's have him come back in.

14 (Mr. Schulte present.)

15 MR. ANDERSON: I have made a packet for you --

16 THE COURT: Let's get the witness sworn in.

17 Come on up here, Mr. Schulte. Please raise your
18 right hand.

19 Whereupon--

20 DARRELL L. SCHULTE

21 a witness, called for examination, having been first
22 duly sworn, was examined and testified as follows:

23 THE COURT: Please be seated.

24 THE WITNESS: Thank you.

25 MR. ANDERSON: Your Honor, may I approach?

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1 THE COURT: Yes.

2 MR. ANDERSON: I have made a packet that
3 basically is a paper copy of Mr. Schulte's three
4 reports, so I'll tender one to him and tender one to
5 you.

6 THE COURT: Thank you.

7 DIRECT EXAMINATION

8 BY MR. ANDERSON:

9 Q. Mr. Schulte, please state your name for the
10 record.

11 A. Darrell Lee Schulte.

12 Q. And where do you live?

13 A. I live in Virginia City, Montana.

14 Q. How long have you lived there?

15 A. Since -- full-time, since 2003.

16 Q. And what is your occupation, sir?

17 A. I'm a retired U.S. Forest Service fire
18 management officer.

19 Q. And did you have to matriculate in school to
20 take that position?

21 A. Yes, sir.

22 Q. And what education did you have?

23 A. I have a bachelor of science degree in forestry
24 from the University of Montana, with a fire management
25 emphasis, from 1978. At that time, there was not a fire

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1 management program, per se, at the University of
2 Montana.

3 Q. And --

4 A. I then went to take a little fire management, at
5 the behest of the Forest Service, which was 36 master's
6 credits in fire sciences at the University of
7 Washington, from 1983 through 1985, if I remember
8 correctly.

9 Q. And what positions have you held or did you hold
10 with the Forest Service?

11 A. I started seasonally in the Kootenai National
12 Forest as a lookout, a Blue Mountain lookout in 1976. I
13 worked my way up to the fire crew for the last two years
14 I was in college, through '78.

15 In 1979, I got my first part-time/full-time --
16 it was called a WAE appointment -- with the Forest
17 Service in Salt Lake City in the Wasatch-Cache National
18 Forest.

19 From there I went to Tiller, Oregon. I ran the
20 brush disposal crew for five years and worked my way up
21 to the AFMO in the Tiller District, in the Umpqua
22 National Forest, burned about 10,000 acres of slash a
23 year on that forest.

24 Then I went to Prineville in 1986 through part
25 of '88, ran the Prineville Hotshot crew. I was the

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1 superintendent.

2 I then moved to Crooked River National
3 Grasslands and then shortly after that converted to a
4 professional forester -- I had been a technician all
5 those years -- on the Siuslaw National Forest, the
6 Waldport District, as the assistant fire management
7 officer/fuels specialist.

8 I then, in 1991, was able to finally return home
9 to Montana -- took me 11 years to get home because
10 people don't seem to want to leave this place -- and I
11 was the assistant fire management officer, then the
12 district fire management officer on the Jefferson Ranger
13 District, on the Deerlodge National Forest at that time.

14 In '93, I became the assistant forest fire
15 management officer for the combined Beaverhead-Deerlodge
16 National Forest in Dillon, Montana, and I was also the
17 fire planner for that tenure until I retired in 2003.

18 THE COURT: Mr. Schulte, would you try to go a
19 little more slowly?

20 THE WITNESS: I apologize.

21 THE COURT: Well, the main reason for that is to
22 get an accurate transcript of your testimony, but also
23 it will be easier for me to follow everything that
24 you're saying.

25 THE WITNESS: Yes, sir, thank you. I will do my

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1 best.

2 BY MR. ANDERSON:

3 Q. Now, you mentioned that you had formal education
4 in fire management.

5 A. Yes, sir.

6 Q. Tell us generally about that.

7 A. The bachelor's degree or the technical fire
8 management portion?

9 Q. The technical fire management portion.

10 A. That was a program instituted by the U.S. Forest
11 Service, that was open to all agencies starting in 1983,
12 if I remember correctly. I was in the second class of
13 that. We would go to the University of Washington for
14 two weeks every two to three months, and, for example,
15 the first two-week session was nothing but statistics.
16 We did three college-level statistics courses in two
17 weeks. Then we would do forest economics. We did the
18 fire sciences, fuel management. I'd have to look back
19 at the course book, but it was 36 master's credits.

20 Q. In terms of fuels management, tell us about that
21 concept.

22 A. As far as my personal experience or the concept
23 in total?

24 Q. The -- the educational concept of fuels
25 management.

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1 A. Okay. Most of my fuels management training was
2 on the ground. Being the brush disposal foreman for the
3 Tiller Ranger District. I had a 20-person crew, and our
4 entire job was disposing of activity fuels and slash
5 and/or planning the next level of treatment around the
6 district.

7 Q. What did -- what did that job entail in terms of
8 planning projects?

9 A. Okay. I would go out and look at an area, a
10 proposed timber sale, for instance. I would determine
11 what the fuel model was in my estimation. Then I would
12 actually -- it was called the Brown's Planar Intercept/
13 Transect Method for estimating forest fuels on the
14 floor. You actually counted sticks -- had a transect, a
15 small gauge, and you would literally count the
16 intersections along that transect of the various size
17 fuel classes and then formulate how many tons per acre
18 there were.

19 Part of that also would have involved using
20 Fisher's method for taking -- weighing the crown
21 biomass, the canopy biomass. At that time we did not
22 have a lot of computer programs. We had BEHAVE on a
23 TI-59 or a HP-71B, handheld calculators. We did not
24 have PCs. So, it was all hand-cranked paperwork, but
25 the Rothermel spread model is still the Rothermel spread

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1 model, and the tenets for the fuel management work that,
2 for instance, Fisher, Brown, and those folks did are
3 still what we use today.

4 Q. In your early training, did you learn of the
5 necessity for fuels management strategy?

6 A. Yes. You would look at -- mainly look at the
7 most economical way to treat the fuels generated in
8 either an activity sale or a thinning or something that
9 would be precommercial, not necessarily a commercial
10 timber sale, and then with the experience we gained, as
11 Mr. Running Wolf did, traveling around the nation,
12 fighting fires as a brush disposal crew, we looked at
13 what happened with fuel treatments in various areas
14 around the Northwest, primarily.

15 Q. What basically is the purpose of fuels
16 management?

17 A. To change the behavior of a fire.

18 Q. What -- let's talk a little bit about the
19 concept of the -- of the -- of the fire triangle.

20 A. Okay.

21 Q. Tell us what that is.

22 A. The fire triangle primarily is heat, fuel, and
23 oxygen.

24 Q. And of those three, which are the ones that you
25 can control?

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1 A. Well, the only one you can truly control is
2 fuels.

3 Q. And is that the foundation for the concept of
4 fuels management?

5 A. I would say it's one of the foundations, yes.

6 Q. What are the others?

7 A. Economics, you would look at whether or not it
8 was something that -- I'll bring that back and say
9 ecological. You would look at what the ecological
10 effects of the treatment might be on the area.

11 Q. What do you mean by that?

12 A. Well, what was the -- the determined effect that
13 you wanted to create? What did you want to protect?
14 What were the values at risk, whether it was cultural
15 resources, wildlife habitat, certain endangered species?
16 There's a myriad of things we had to plan for and
17 protect.

18 THE COURT: Mr. Anderson, the way we typically
19 deal with expert testimony in our Court, and I think the
20 way most courts do this, is when you have an expert
21 witness, you establish the expert's credentials and
22 qualifications to testify as an expert, and then you
23 then offer the person as an expert in defined fields of
24 expertise, and then the United States has an opportunity
25 to conduct voir dire examination if they wish.

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1 MR. ANDERSON: Yes, sir.

2 THE COURT: This recent testimony seems like
3 it's getting a little bit into the substance of his
4 testimony, and I just wanted to make you aware of that
5 difference.

6 MR. ANDERSON: Okay. I'm happy to restructure
7 that a bit.

8 BY MR. ANDERSON:

9 Q. In terms of your experience, what else did you
10 do in the context of fuels management in your jobs with
11 the Forest Service?

12 A. On the Crooked River National Grasslands, we
13 instituted a June anyplace per release program. We
14 basically went through and removed June anyplace per
15 across the landscape.

16 On the Beaverhead-Deerlodge National Forest,
17 since I was the forest fire planner and assistant forest
18 FMO, I was involved in virtually all of the fire
19 management planning that was done on that forest, a
20 little over 3.5 million acres, I believe, total forest
21 area.

22 And, for instance, we did a landscape-level plan
23 for the Centennial Mountains, at the south end of the
24 forest. We did a landscape-level fire and fuels
25 management plan for the Pioneer Mountains. I

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1 participated in planning efforts at the behest of other
2 forests around us. If the Gallatin needed help, I would
3 go help them.

4 Q. When you use the term "landscape fuel plans,"
5 what are you referring to there?

6 A. For instance, the Pioneer Mountains is the
7 stand-alone mountain chain between the Big Hole Valley
8 and the Jefferson Valley that runs north and south from
9 Butte almost to Dillon. So, that would be considered a
10 landscape, from valley, through the mountaintop, down to
11 the next valley. There may be a watershed. There may
12 be a watershed plan for the Ruby River corridor, for
13 instance, or the Jefferson River corridor. In that case
14 we cooperate with other land owners around the area to
15 do a complete plan for the area.

16 Q. And how many acres are you talking about there?

17 A. Oh, like I said, total of forest is 3. --
18 roughly 3.5 million office. The Pioneer is several
19 hundred thousand. I honestly don't remember the exact
20 number.

21 Q. Did you have experience in an interagency
22 capacity, working with other agencies?

23 A. Yes, sir.

24 Q. And what was that experience?

25 A. Twofold. I worked on incident management teams

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1 as a fire behavior analyst. I was on the track to
2 become -- I was an ops chief short-term in the
3 middle/late eighties, and I stayed with fire behavior
4 after South Canyon in 1994, but primarily I worked on
5 interagency incident management teams.

6 And I also worked in the National Fire
7 Management Analysis Planning Process for the Forest
8 Service, and we worked with states and other agencies
9 looking at fire financial planning, and that was all
10 interagency, as well as, like I said, some of these
11 landscape plans were interagency because we would cover
12 both state, private, BLM. Whatever -- whatever the
13 landscape encompassed, we would have to cooperate and
14 collaborate with the other land owners.

15 Q. And did you -- did you also work in the context
16 of interagency work with respect to fire -- fire -- in
17 addition to fuels management, also fire behavior and
18 fire management?

19 A. Yes, twofold again. On the incident management
20 teams, we were called to go wherever they needed us in
21 the nation. For instance, I was in Glacier National
22 Park in 1994, working on the Starvation Creek Fire when
23 I was -- we would virtually, Mr. Anderson, go anywhere
24 they wanted us to in the nation to work, and that would
25 be across agencies.

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1 On the home forest, again, we had interagency
2 agreements with our state, BLM, the other agencies
3 involved, some private land owners, to work and suppress
4 fires in the Beaverhead-Deerlodge.

5 Q. At some point did you get to develop an
6 understanding and training in computer modeling of fires
7 and fuels?

8 A. Yes, sir. I was always interested in that.

9 Q. Tell us when that training started.

10 A. It actually started with Technical Fire
11 Management, and they had this newfangled thing called
12 Windows that came out on PCs, and we had BEHAVE for
13 Windows at that time. So, it was a whole new concept.
14 We had used nothing but hand-held calculators prior to
15 that.

16 By 1995, we had FARSITE and several other small
17 programs that came out that would enable us to do more
18 of a visual representation of fire behavior, as well as,
19 like, for instance, FireFamilyPlus, which lets us
20 process historical weather data.

21 Q. And did you become certified to teach those
22 classes?

23 A. I assisted in teaching in RX-590, which is the
24 long-term fire behavior analyst training at Miranda,
25 Arizona, the National Training Center, from I believe it

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1 was 1996 until 2001 or '2. I was part of the cadre, and
2 part of my job was to help teach computer programs, yes,
3 sir.

4 Q. And did you teach the FARSITE program?

5 A. Parts of it.

6 Q. Which parts did you teach?

7 A. Basically, I was troubleshooting. I would be in
8 the back of the room, and if someone had an issue in the
9 class, they would ask me to come up and help them. I
10 would try and help point out where they might be hung up
11 with the program.

12 Q. Did you develop -- did you have training in GIS
13 technology?

14 A. I picked that up ad hoc as I went along with the
15 Forest Service. It became part of the job more and more
16 as Arc/Esri GIS became more popular.

17 Q. Tell us what GIS is.

18 A. It's geographical information system. It's a --
19 like the map that we have up there, I think Exhibit 124,
20 with the polygons that show the fuel treatments. Those
21 are generated in a geographical information system so
22 you can represent them on a map.

23 Q. And did you -- is that commonly used in fire
24 behavior science?

25 A. Yes, sir.

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1 Q. What else is commonly used in fire behavior
2 science?

3 A. We use LANDFIRE now.

4 Q. What is LANDFIRE?

5 A. LANDFIRE is a nationwide, seamless basically,
6 satellite imagery that allows us to look at the fuels,
7 whether it's Anderson's 13 or Scott and Burgan's 40 fuel
8 models, across the nation, across boundaries. It also
9 shows us slope, aspect, elevation, canopy cover, fire
10 regime. There are probably 15 or 20 different classes
11 of information we can download simply by drawing a box
12 on the screen around an area of concern, and then we
13 input those.

14 Q. Any other data that you learned to use in this
15 computer programming experience and education that you
16 have?

17 A. Oh, yes, sir. Again, I mentioned previously
18 FireFamilyPlus, which takes the remote automatic weather
19 station weather streams from the meteorological sites
20 around the nation, there's quite a network, and I can
21 download, if it's available, historical fire and weather
22 data, which includes temperatures, humidities, wind
23 speeds, gusts, all the pertinent data we would need for
24 fire management, and then process that into packages or
25 data files that are usable in different fire management

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1 planning programs we have, such as FARSITE.

2 Q. Any other fire and fuels management programs
3 that you have learned to use and commonly use in your
4 profession?

5 A. Going through the icons on my computer right
6 now, besides FireFamilyPlus, FARSITE, FlamMap --

7 Q. What is FlamMap?

8 A. FlamMap takes a FARSITE output file and gives
9 you an instant image, basically. It doesn't burn it,
10 per se, as FARSITE does and show a progression. It will
11 give you the outputs, a more short-term, graphical look,
12 and you can look at time of arrival; you can look at
13 travel corridors. There are several different venues
14 there that aren't necessarily available in FARSITE quite
15 as easily. We use the same basic inputs.

16 THE COURT: Mr. Anderson, let's take a morning
17 break at this point, and let's reconvene at 11:15.

18 MR. ANDERSON: Thank you, Your Honor.

19 (Court in recess.)

20 THE COURT: Thank you. Please be seated.

21 MR. ANDERSON: Thank you, Your Honor.

22 THE COURT: You may go ahead.

23 MR. ANDERSON: Thank you.

24 BY MR. ANDERSON:

25 Q. Mr. Schulte, do you have experience in the

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1 context of your work as an assistant fire manager of a
2 national forest and as a fire manager of a national
3 forest and as an interagency liaison for various
4 agencies, in the strategic planning for fuels treatment
5 programs?

6 A. Yes, sir.

7 Q. Generally describe that.

8 A. As I was talking about with the Pioneer Mountain
9 landscape that we looked at, we would assess what the
10 risks were, what we valued and had to protect, and then
11 we would design treatments, whether it was a timber sale
12 or some other kind of fuel manipulation to protect those
13 assets or private property, depending upon what we were
14 looking at.

15 Q. And were these projects short-term or long-term
16 projects?

17 A. Both. Mostly long term.

18 Q. In that context, did you also have to deal with
19 fuels management issues as they relate to wilderness
20 areas?

21 A. Yes, sir.

22 Q. Could you describe that for us.

23 A. Okay. For instance, in the
24 Beaverhead-Deerlodge, we had the Metcalf Wilderness, and
25 we were trying -- "we," the forest -- was trying to

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1 determine if the use of what would be called now
2 wildland fire use fires was appropriate. So, I
3 analyzed, using FARSITE, whether or not we would have a
4 problem with a fire starting -- I believe it was Indian
5 Creek. We determined it wasn't a good risk. The
6 Metcalf Wilderness is too small and with very poorly
7 defensible areas with Big Sky, Pioneer Mountain, and
8 several other high-value areas adjacent to it. So,
9 politically, the managers decided not to do that.

10 Q. Do you also have, in the context of your fire
11 management experience, experience with suppression
12 planning, either in a national forest, a wilderness, or
13 in an interagency context?

14 A. All three. Functioning as a fire behavior
15 analyst or division supervisor or as an operations
16 section chief, as I did on incident management teams,
17 that was our primary purpose, was suppression, and that
18 was across agencies, across political boundaries. It
19 didn't matter. It's wherever the fire occurred.

20 For instance, I was at the Livermore Fire in
21 1994, in the Blackfeet Nation, as a fire behavior
22 analyst. We were looking at suppression there. On the
23 Beaverhead-Deerlodge, we also had the same thing, and I
24 would sometimes not be allowed to function on my
25 incident management team if we had a high risk or a high

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1 need on the home unit, as, for example, the year 2000.

2 We had lots of fires in the Beaverhead-Deerlodge
3 and the Bitterroot, and it was quite a fire year. I was
4 home, B-D, for a month and a half before I was able to
5 move over and help with the Gallatin on one fire use
6 project for Bill Breedlove, the forest FMO at that time.
7 But it was a month and a half of suppression only on the
8 Beaverhead-Deerlodge site.

9 Q. Now, since you've left the employ of the Forest
10 Service, have you continued in your occupation as a
11 fuels manager and fire behavior specialist?

12 A. I have been consulting since 2004 in my own
13 little business, and then as part of Wildland Fire
14 Associates after about 2007, if I remember correctly,
15 and that's been my forte, has been fire management and
16 fuels management planning.

17 Q. Are there some notable fires that you have
18 consulted on since then?

19 A. Yes, sir. Yarnell Hill, I was part of our team
20 to assess -- I was personally responsible for looking at
21 the fire behavior assessment done by the serious
22 accident investigation team, and I did, and the team did
23 a very good job on the fire behavior analysis.

24 Prior to my retirement, I was part of the 1995
25 review of the South Canyon Fire, which killed 14 young

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1 men and women, and my sole role there, as an agency
2 employee, was to look at how many fire behavior
3 analysts, for instance, we had functioning at that time
4 nationwide.

5 Q. Have you had experience in the -- since then, do
6 you continue to consult with the -- with the Forest
7 Service and other governmental agencies?

8 A. Yes. I've done that with state agencies, with
9 the Allegheny National Forest and county agencies back
10 there, doing some community-wide protection plans for
11 entire counties. I travel to Fort Gordon, Georgia,
12 typically once a year to do some fuel modeling, smoke
13 modeling, and emissions modeling for them for their
14 prescribed burning program.

15 I've rebuilt or rewritten fire management plans
16 for several Fish & Wildlife areas. I can dredge those
17 up. And I did do part of the EA work in the Bitterroot
18 in I believe it was 2005 and the south end of the Darby.
19 It was a fuels management project for the Darby
20 District, and I was their consultant on fuels and stuff
21 there.

22 Q. When you say "EA," -- you are referring to --

23 A. Environmental assessment.

24 Q. -- environmental assessment in the context of a
25 NEPA --

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1 A. Yes, sir.

2 Q. -- process?

3 A. Yes, sir.

4 Q. In the context of a NEPA process, is that a
5 common -- is that common, for you to work in that area
6 in the context of fuels management projects?

7 A. It was when I was an agency employee, and in
8 that one instance, contracting afterwards for the
9 Bitterroot National Forest, yes, sir. And NEPA has been
10 part of the fire management planning process and reviews
11 for the rewrites I've done. We've had to refer to NEPA
12 constantly on those for several different national parks
13 and Fish & Wildlife Service areas.

14 MR. ANDERSON: Your Honor, I think we'll tender
15 Mr. Schulte as an expert.

16 THE COURT: In what?

17 MR. ANDERSON: On the subject of -- if you want
18 me to, I can ask him what his assignment here is without
19 asking him what -- what --

20 THE COURT: No, just tender him in the areas of
21 expertise in which you're offering him.

22 MR. ANDERSON: Okay. We are going to tender him
23 as an expert in fuels management, fuels management
24 planning, strategic planning for fuels management,
25 strategic planning for -- for fires and fire behavior,

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1 and strategic planning, long-term planning, for the
2 foreseeable risk of fire on landscapes.

3 THE COURT: All right.

4 Mr. Bair, do you want to do some voir dire?

5 MR. BAIR: That's quite a list. No, we don't
6 intend to conduct voir dire, Your Honor. Our objections
7 are to Mr. Schulte's methodology, not his
8 qualifications. We don't object to Plaintiff's
9 request -- object to the Plaintiff's request.

10 THE COURT: All right. There's probably a more
11 efficient way to describe the areas of expertise, but
12 the Court will accept Mr. Schulte as an expert in fuels
13 management, fire behavior, strategic planning, those
14 subjects generally.

15 MR. ANDERSON: And strategic fuels management
16 planning.

17 THE COURT: Strategic fuels management planning.

18 MR. ANDERSON: Thank you.

19 BY MR. ANDERSON:

20 Q. Mr. Schulte, I'd like to ask you about the
21 concept of the fire triangle. Tell us what that concept
22 is.

23 A. Well, we have three elements that are necessary
24 for a fire to be there, you know, heat, fuel, and
25 oxygen, and the simple canon of the fire triangle is to

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1 remove one of the three to put the fire out. In making
2 a fireline, for instance, we might separate the fire
3 from the fuels, whether it's with a Pulaski width or it
4 could be with a bulldozer or a retardant strip backed up
5 with fireline or machine line.

6 You may remove oxygen by throwing dirt onto the
7 fuels that are burning or smoldering if you can get
8 close enough to them, or water, or, again, a combination
9 of those things.

10 Q. What's the primary thing in terms of that
11 triangle that you can control?

12 A. Fuels.

13 Q. In the context of strategic planning for fuels
14 management, what do you do?

15 A. You take a look at -- if you're working at a
16 stand level, for instance, or a landscape level -- it
17 doesn't matter -- you need to evaluate what the fuels
18 and vegetation are in the area, and that when I started
19 was typically a site visit. You'd walk through the
20 area. With the advent of GIS and more spatial stuff,
21 analysis available, and Google Earth, for instance, for
22 aerial photos and so on, you can look at photos and not
23 necessarily have to spend quite as much time out there,
24 but that removed you from the ground. So, it was more
25 of an ocular estimate than an actual on-the-ground

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1 estimate.

2 You would assess those risks, look at what the
3 values were that you want to protect, determine what the
4 fuel loading is or what the changes you would have to
5 make to the fuels in the area might be, and then plan,
6 through trial and error often, what would work in the
7 area. It might be more than one entry. It might be
8 just one entry.

9 Q. In your experience, what is better to use in the
10 context of fuels management? Is it on-the-ground
11 assessment or is it satellite assessment?

12 A. On the ground.

13 Q. And why is that?

14 A. Because you know what's actually there.
15 Satellite assessments -- I'm sure there's a margin of
16 error, I don't know what it is, but it's a satellite
17 call, as I understand it, based on algorithms that
18 determine what the vegetation may or may not be, what
19 the canopy spacing may or may not be, and the vegetation
20 calls are used to determine what the fuel model may or
21 may not be. So, it's always advocated to ground truth.

22 Q. And in your experience, is that what you
23 primarily used, is an on-the-ground assessment of the
24 fuels?

25 A. Yes, sir.

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1 Q. What other elements go into a strategic plan for
2 fuels management, besides the fuel -- assessment of the
3 fuels themselves?

4 A. You look at the fire history, what the
5 probability of a fire per acre in a given forest or area
6 might be based on historical fire data, which is
7 typically just a simple division of the number of fires
8 over a given time frame by the acres involved. For
9 instance, I just did some research on a project in the
10 Kootenai, and it was 0.00 -- 0.02 fires per acre per
11 year in the Kootenai National Forest, as an average.

12 And that probability would determine -- you can
13 never determine exactly where a fire will start, but you
14 can determine what the risk is. You can look at the
15 probabilities and start to value or to weigh the values
16 at risk and where you need to treat first, in your own
17 opinion or the opinion of the folks you're working for.

18 Q. Is the type of cover or tree -- tree stand that
19 you're dealing with, is that an important factor in your
20 assessment?

21 A. Yes, sir.

22 Q. Why is that?

23 A. Different tree types have different fire
24 characteristics. They have different fire behavior
25 characteristics, different responses to fire, basically.

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1 The ecology is different.

2 Q. Is the topography of an area important in your
3 assessment process?

4 A. Yes, sir.

5 Q. And why is that?

6 A. Steeper slopes are harder to defend. Typically,
7 over about 40 percent slope would be generally, as I
8 remember, the maximum that you would want to operate a
9 track vehicle, like, for instance, a bulldozer or a
10 skidder to log, and then you may have to go with a tower
11 or helicopter logging to access the stems for the fuels
12 in the area.

13 It also increases and changes your fire spread
14 because slope acts like wind. The steeper the slope --
15 typically, I think it's up to about 70 percent -- the
16 faster the fire will spread because of preheating of
17 fuels.

18 Q. Now, do you also assess the natural barriers in
19 your landscape?

20 A. Of course.

21 Q. And what's the purpose of that assessment?

22 A. Well, you may not need to do any fuel treatment
23 if you have adequate natural barriers. You may be able
24 to tie your treatments to them strategically so that it
25 makes sense and you have a good defensible line.

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1 Q. Is all of this process documented in the typical
2 case?

3 A. Yes.

4 Q. In the course -- in your review of the -- of the
5 materials -- let me strike that.

6 Did you review materials for your -- for your
7 opinions in this case?

8 A. Yes, sir.

9 Q. What materials did you review? Are they listed
10 on your -- on your reports?

11 A. On both reports, it should be Exhibit 4.

12 Q. Okay. Would you pull up --

13 A. Exhibit 3 on the supplemental and Exhibit 4 on
14 my primary report.

15 Q. -- Plaintiff's Exhibit 87-32.

16 Is this a -- is this a list of the materials you
17 reviewed for your opinions in this case?

18 A. This is the list for my first report, yes, sir.

19 Q. And did you review other documents or is this
20 the primary -- is this the sole list?

21 A. There are other documents listed in my Exhibit 3
22 in my supplemental report, another four or five at the
23 end, but this is not a complete list, no, sir.

24 Q. How many documents -- how many pages of
25 documents did you review for your opinions in this case?

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1 A. I believe we received over 60,000 pages from the
2 Government in our initial requests, and it took a while
3 to parse all those out and break them out. If I
4 remember right, they came in one gigantic file.

5 Q. In reviewing the history of fire in this area,
6 what did you review?

7 A. Well, I looked at the BIA fire management plans
8 and the forest management plans for the Bureau of Indian
9 Affairs. I looked at Glacier National Park's fire
10 management plans that we were given. I looked at -- I
11 downloaded the fire occurrence from the National fam-web
12 site, so that was all of the listed fires. I believe I
13 went back to 1995 on that.

14 It's kind of a vague question because there's
15 quite a bit of area to cull in fire history. The EAs
16 outline quite a bit of the fire history, as does the
17 Sawyer's articles.

18 Q. Did you review the BIA's history of the -- of
19 its relationship with the -- with the Blackfeet Tribe
20 and Forest?

21 A. Yes, sir. And if you're referring to the
22 "Skidways to the Past" article, I think that was
23 supplied by the defense. I did review that, too.

24 Q. What did that disclose to you?

25 A. I believe it was as early as 1920, if I remember

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1 correctly, the man's name was Gardipee, and he was with
2 the Blackfeet Agency or the Blackfeet Tribe, and he was
3 very concerned about fire spreading from Glacier
4 National Park or other areas outside into the
5 Reservation.

6 Q. And did that history disclose historically, in
7 the 20th Century, fires crossing from Glacier Park to
8 the Blackfeet Reservation?

9 A. Yes, sir.

10 Q. Do you recall how many fires historically we're
11 talking about?

12 A. I don't exactly. I think there were seven or
13 eight, but that's just off the top of my head.

14 Q. Were these -- were these stand replacement-type
15 fires?

16 A. The history I'm most familiar with would go back
17 to just Napi Peak, and the 1910 fires, of course, were
18 stand replacement. Between 1910 and, say, 1984 -- I
19 think it was -- Napi Peak, I'm not absolutely positive
20 about stand replacement, but typically that's what you
21 would see in heavy fuels.

22 Q. And is that important in your assessment
23 process?

24 A. Yes, sir.

25 Q. Why is that?

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1 A. The heavier the fuel loading, the harder it's
2 going to be to stop a fire that gets started, or as I
3 think Mr. LaPlant said, "romping." I'm trying to
4 remember what his exact words were, but -- or it might
5 have been Mr. Soleim said when they get up and romp or
6 they get up in the crowns and move. It's very
7 difficult.

8 Q. Do you -- in the course of strategically
9 planning, do you assess the weather history?

10 A. Of course.

11 Q. What's the purpose of that?

12 A. That would typically give me what's called the
13 planning levels or percentile breakdowns for the
14 fire-to-injury rating for an area, which is -- in the
15 case of the Blackfeet Tribal Grounds, typically it's an
16 energy release component, and you would look at
17 historically where the large fires occurred that
18 correspond with the higher ERC ratings, and it gives you
19 an idea of what the fire danger could be, what the
20 potential is.

21 Q. Is the historical weather data available for the
22 Blackfeet Forest and the boundary between the Blackfeet
23 Forest and the Glacier National Park?

24 A. There's historical weather data available from
25 the St. Mary's RAW station and from the Browning RAW

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1 station. I know there's other -- I'm pretty sure
2 there's other RAW stations scattered about. I'd have to
3 look at my notes to see where they were.

4 Q. Is there -- is there other information sources
5 that you use in the strategic planning process for fuels
6 management?

7 A. I always rely on the local experts. They know
8 the area much better than me coming in. For instance,
9 on a contract basis or, you know, visiting onsite, for
10 instance, in Georgia, I rely on the local experts there
11 because they know the fire behavior better than I do.

12 Q. Did you -- in the course of your review of the
13 materials that we've described here, did you determine
14 whether or not either the -- either the BIA -- let's
15 start with the BIA, whether the BIA made any sort of
16 assessment process for fuels management in this case?

17 A. In the documents I was supplied and that I tried
18 to query on the internet, I could find nothing.

19 Q. With respect to the Glacier National Park
20 documents, did you note any sort of assessment process
21 that you're talking about here in the border area
22 between Glacier National Park and -- and the
23 Reservation's forest?

24 A. Other than a recognition of the risk of a fire
25 spreading onto the reservation lands from outside, such

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1 as Glacier National Park, no.

2 Q. Is that -- is that -- is simply recognition of
3 the risk, is that enough?

4 A. Not in my opinion. There needs to be something
5 done.

6 Q. In your work as a forest manager on the
7 Beaverhead-Deerlodge National Forest, was that enough?

8 A. No, sir.

9 Q. What did you do?

10 A. We, like I said, worked with collaborators. If
11 we had -- Bannack State Park is right on the periphery
12 of our forest -- my old forest, sorry -- and BLM
13 property, as well as Montana, you know, Department of
14 Natural Resources properties. They were concerned about
15 wildland fire in the area. We worked with them
16 collaboratively to plan for that.

17 Q. So, tell me what strategic process -- I mean,
18 what is the process that you go through to plan a fuels
19 project?

20 A. You identify the area of concern on the map.
21 You get your map work and your base started that way.
22 Then I would get the vegetation data, the slope -- a
23 digital terrain model or a DEM, digital elevation model,
24 which has slope aspect, elevation, all those things
25 built into it.

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1 After about 2000, we began to use, as I said,
2 LANDFIRE, which had the seamless fuels and vegetation
3 classifications for us, which made our job much easier.

4 You get those things displayed graphically, have
5 meetings to determine what the risk was, have onsite
6 visits, typically go back out and look at more. It
7 wasn't a quick process. It took years often to develop
8 those things.

9 Q. And you're talking about landscape fuels
10 projects. Is that right?

11 A. Actually, both, depending on the complexity,
12 but, yeah, the latter part of my tenure was more
13 landscape level.

14 Q. Is there any evidence in this record that you've
15 seen indicating that this process was undertaken on
16 either side of the border in this case?

17 A. No, sir.

18 Q. What specifically was your assignment in this
19 case?

20 A. Initially, when you folks contacted us in 2009,
21 you asked us to assess whether or not we felt the
22 suppression actions taken on the Red Eagle Fire were
23 adequate. My colleagues and I determined they were
24 because it was a crown fire. The resources that were
25 available, the timing and so on, and the lack of fuel

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1 treatment, it was not stoppable until the fuel
2 composition changed or the weather changed.

3 My second assignment was to see, just
4 simplistically, if a fuel model change may have impacted
5 a fire, something similar to the Red Eagle Fire and its
6 impact on the Blackfeet Tribal Forests, which is what I
7 did.

8 Q. Is this what a prudent fire manager would do?

9 A. In my opinion, yes.

10 Q. And did you see any evidence that a prudent fire
11 manager did -- made this assessment on either side of
12 the border in this case?

13 A. No, sir.

14 Q. What is the specific problem that a fire manager
15 has to deal with with respect to the Blackfeet Forest in
16 this case?

17 A. The specific problem, I think one part of it is
18 the fact that you're looking at -- I believe it's a
19 little over 50,000 acres of commercial timber, total, in
20 the Blackfeet Forest. And if I remember correctly, it
21 was about 175,000 acres of timberland, whether it was
22 commercial or not or reserve, in the Blackfeet Forest.
23 So, you had a small area that you were trying to protect
24 from a large contiguous area of untreated fuels
25 adjacent -- right adjacent to it.

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1 Q. Is the Glacier National Park's management versus
2 the Blackfeet Forest management, is that a problem?

3 A. Yes, sir.

4 Q. Why is that a problem?

5 A. The Park Service chooses in its policy to not
6 treat the fuels. It's -- I would call it de facto
7 wilderness in their mind. I think that the BIA, up
8 until -- I think up until the time the Tribe took over
9 the forestry function on the Blackfeet Forestlands, the
10 BIA was not necessarily interested in doing anything
11 that was strategically planned either.

12 Q. And did the -- did the two forests appear to
13 have separate -- separate goals?

14 A. Yes.

15 Q. What were those?

16 A. Well, the Blackfeet Forest is managed for
17 commercial timber use and aesthetic values of the
18 Blackfeet Nation. Glacier National Park was managed not
19 for commercial use but for scenic and recreational use.

20 Q. And how did that create a conflict?

21 A. In my opinion, if you're not allowed to treat or
22 manipulate fuels on a common border and you have a
23 problem, heavy fuels, as identified by Bushey in 2004,
24 on both sides of the border, you are looking at -- you
25 know that eventually it will burn. You don't know when,

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1 and you don't necessarily always know how hot it will
2 burn, but every acre eventually will burn, and the risk
3 is there that you will have a fire.

4 Q. So, the risk is foreseeable, and with that
5 foreseeable risk, what would a prudent forest manager
6 do, in your opinion?

7 A. Again, you collaborate with your neighbors. You
8 work across the board to try and develop a common plan
9 that will protect both values. There is a potential, I
10 would imagine, for a fire with an east wind component to
11 spread from the Reservation into Glacier National Park
12 as well. So, it should be treated by both sides to
13 protect both parties.

14 Q. Is wind part of the problem that you're -- that
15 you're trying to deal with?

16 A. Historically, there is the Chinook winds and
17 there are high winds on the east side, yes, sir.

18 Q. And is the topography also part of this problem?

19 A. Of course.

20 Q. And could you generally describe that element of
21 the problem.

22 A. Again, like we covered just a little bit ago,
23 the steeper the ground, typically the harder it is to
24 manipulate or work on or stop a fire, for one, or to
25 treat the fuels. There are other impacts that could

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1 happen depending upon how hot the fire burned. There
2 may be erosion potential, revegetation, the lack of
3 revegetation, or a change in the vegetation due to
4 severity of the slope.

5 Q. In the area where the Red Eagle Fire came over,
6 what is the topography there?

7 A. Pretty gentle, actually. It ranges, if I
8 remember correctly, from the border, other than some
9 short, steep pitches into Divide Creek on the Glacier
10 National Park side, it ranges from zero to 20 and 20 to
11 40 percent on most of the Blackfeet area and on the
12 Park.

13 Q. Is that elevation change -- does that make
14 that -- that area accessible?

15 A. Yes, sir.

16 Q. Does it make it accessible for both heavy
17 equipment and light equipment and human power to manage
18 fuels?

19 A. Yes, sir.

20 Q. Is that an element of the assessment process?

21 A. Of my assessment process or a generic one?

22 Q. Generic.

23 A. Generic, yes, sir.

24 Q. And your assessment process in this case?

25 A. I was simply asked to look at the possibility

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1 that a fuel treatment on the border would be effective
2 or not in slowing down the spread of a fire like the Red
3 Eagle Fire.

4 Q. And what did you do to arrive at an opinion on
5 that question?

6 A. I gathered the data and looked at the problem.
7 First off, like I said, I downloaded the LANDFIRE
8 database with the 2001 fuels, and I chose to go with the
9 13 fuel models because that's primarily what the
10 managers would have used at that time frame. I got the
11 digital elevation models -- slope, aspect, terrain --
12 and I got the historical weather from St. Mary's, which
13 when I tried to first extract this data, 2009, the
14 hourly wind speeds are not available. So, I went to
15 Browning, and I downloaded their hourly wind speeds for
16 the same time frame roughly as the Red Eagle Fire.

17 I looked at the final fire packages from
18 Stanich's and Heinz's fire management teams, who were
19 both on the Red Eagle Fire, as well as the information
20 provided to me by the Blackfeet Tribe, which gave me the
21 final perimeter, the shapefile, for the Red Eagle Fire.

22 And then I built the landscape, meaning I
23 inputted the values. I had to run the wind and weather
24 streams through FireFamilyPlus, which generates the
25 FARSITE output files for wind and weather, and I chose

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1 to accept the fuel model calls in the LANDFIRE database
2 from that time frame as fact, because I couldn't
3 necessarily go back and look at what was really there,
4 since it had burned.

5 Q. Well, what are the fuel model calls in that
6 area?

7 A. Predominantly, in that area, 80 percent was Fuel
8 Model 10. There were some models 1, 2, 5, some 8, and
9 further into the Blackfeet Reservation area, there was
10 an 11.

11 Q. I'd ask you to go to Exhibit 87-11 and 12,
12 Plaintiff's Exhibit 87-11 and 12.

13 A. Yeah.

14 Q. Can you blow that up, please. That's good,
15 right there.

16 Is that -- in your report, Exhibit 87, is that
17 an example of Fuel Model 10 in this area?

18 A. Yes, sir.

19 Q. What is -- generally describe what a Fuel Model
20 10 is.

21 A. It's the heaviest dead-and-down fuel category in
22 Anderson's 13 in natural fuels, and that's outside of
23 activity fuels, which are 11, 12, and 13. It has the --
24 typically, as Mr. Soleim said, it either burns or it
25 doesn't, and it can be a very intense fire when it does

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1 burn.

2 As you can see in the pictures, there's lots of
3 large material down. It's very difficult for resistance
4 control and cutting hand line or dozer line in the area,
5 it's very -- very difficult, and it's laden with fuel,
6 so you have got quite a bit of work to do, plus you have
7 to typically limb and we would call it bring the black
8 with you or burn out as we've worked through this kind
9 of fuel model in the past to give us a safety margin.
10 But it's difficult, very difficult.

11 Q. Is this fuel model that we're looking at typical
12 of both sides of the border?

13 A. Yes.

14 Q. So, this was a problem you had to deal with.

15 A. Yes, sir.

16 Q. Is this -- is the fuel the only thing you could
17 deal with in attempting to manage this problem?

18 A. Well, it's the only thing that we can really
19 change. I mean, the weather and topography don't
20 change, not at our will, but -- they do change at their
21 own will, but we don't have much effect on them.

22 Q. And then -- and then, as I understand it, you
23 prescribed changing this Fuel Model 10 to a fuel model
24 that mimics a Fuel Model 8. Is that correct?

25 A. Yes, sir.

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1 Q. What do you mean by that?

2 A. What I wanted to do is reduce the fire
3 intensities and the spread, like flame lengths, the
4 potential for it to crown, and knock the fire down
5 basically to the ground, something that was more
6 suppressible and a lot less impactive.

7 Q. Show Mr. Schulte -- please show Mr. Schulte
8 87-12, Plaintiff's 87-12.

9 What does this picture show?

10 A. It shows a typical Fuel Model 8, according to
11 Anderson.

12 Q. And why is this fuel model something that you
13 prescribe here?

14 A. Well, you can look at the difference in just the
15 fuel loadings and the stems. It's not nearly as
16 crowded, if you want to use that term, with stems
17 breaker. There's not near the amount of dead-and-down
18 fuel criss-crossing through the area. There is some
19 litter and forb grasses, depending upon where it occurs.
20 And it's much easier to put a handline through that or a
21 catline, and the intensities would be such that it would
22 be much more safe for the firefighters to be in that
23 area.

24 Q. Conceptually, what are you doing when you change
25 a Fuel Model 10 to a fuel model that mimics this Fuel

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1 Model 8?

2 A. Like I said, you're removing the vast majority
3 of the dead-and-down fuel on the forest floor. You
4 would be limbing it up, raising the canopy base height,
5 so it wouldn't have the ladder fuels, so the fire would
6 not be able to get into the crowns as easily. You may
7 open up some spacing in there and take some of the stems
8 out if you had to. It depends upon what the
9 prescription was.

10 Q. From a fire science and fire behavior
11 perspective, what are you -- what are you doing?

12 A. Trying to change the intensity and the spread
13 rates of a fire.

14 Q. What happens when a fire hits this fuel model,
15 this fuel model that mimics Fuel Model 8?

16 A. Typically if it's a crown fire, is that what
17 you're asking?

18 Q. Yes.

19 A. It will drop to the ground. Modeling shows that
20 drops -- the flame lengths dramatically lessen from over
21 100 feet to anywhere from one to four to six feet,
22 typically under four in my models. And it slows down.
23 The canopy is gone as far as a crown fire goes. The
24 intensity has dropped dramatically. The spread rates
25 drop. The resistance and control, everything is easier.

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1 The spotting is gone because you haven't got it
2 torching -- it's not crowning. It might torch
3 occasionally, that's still a possibility in a Fuel Model
4 8, but it wouldn't be a sustained crowning run.

5 Q. And when the temperatures are dropped and the
6 flame lengths are dropped, what are you able to do from
7 a suppression perspective?

8 A. If you have enough area to work safely in front
9 of a fire like that, my vision was to apply a retardant
10 and get ground troops in there after the retardant --
11 you have about two to three hours typically with a
12 retardant. If you don't reinforce that with a fireline
13 of some kind, whether it's mechanical or it's hand line,
14 it won't last more than two to three hours, but it would
15 give you a place to work, and it might even be just as
16 minimal as lighting from Highway 89, if it was that
17 close to 89, and letting it burn back into the Park.

18 Q. Are there examples of forest fires that have
19 hit -- that have been intense forest fires that have hit
20 this Model 8 fuel model?

21 A. Oh, yes, sir.

22 Q. Can you give us examples of that?

23 A. One that's in ponderosa pine is Camp 32, which
24 is up by Eureka, Montana, and it was a crown fire
25 running toward the town. It hit the treated area and

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1 dropped to the ground. That's documented by Ron
2 Hvizdak, who was the fire management officer at that
3 time.

4 The Wallow Fire, 2002, in I believe it was New
5 Mexico, you had a half-mile-wide fuel break that was
6 created around the towns in the Apache-Sitgreaves
7 National Forest, and dropped to the ground.

8 Little Wolf Fire was in lodgepole, but that was
9 primarily in the clearcuts, a little bit different issue
10 than this, but the fuel breaks changed the fuel
11 composition and the fire's intensity, and the crown
12 fires dropped to the ground.

13 Q. And that's what you're trying to do with
14 changing these fuel models.

15 A. Yes, sir.

16 Q. Did you assess whether it was possible to change
17 these fuel models on the border between Glacier National
18 Park and the Blackfeet Forest?

19 A. I looked at the opportunity in the Fuel Model 10
20 to change it to Fuel Model 8, yes, sir, and I drew a
21 polygon around large areas, converting everything in
22 there to Fuel Model 8, because I was attempting to mimic
23 that in all fuel models.

24 Q. In your planning process, did you account for
25 the entire border between Glacier National Park and the

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1 Blackfeet Reservation?

2 A. Yes, sir, I did. I looked at the entire 70
3 miles from the Canadian border down to about Green Lake,
4 where it gets out onto the prairie, primarily looking at
5 the forest, and using LANDFIRE fuel models that I had
6 gathered with Anderson's 13, identified about 1500 acres
7 of Fuel Model 10, including the area that burned in the
8 Red Eagle Fire, by the way.

9 Q. Did you account for the -- whatever natural
10 barriers there were, also?

11 A. Oh, they would show up as barren, 99 in these
12 areas. They will fall into the planning process, but it
13 was -- it's not the entire border that I looked at
14 treating. It was just patches of Fuel Model 10 that
15 were contiguous across the border.

16 Q. For the entire 70 miles that you're talking
17 about, how many acres actually would be treated in your
18 modeling?

19 A. I identified 5800 acres.

20 Q. Go to Plaintiff's Exhibit 87-30. Could you blow
21 that up, please.

22 Mr. Schulte, how many acres were treated during
23 the ten-year period between 1995 and the -- the 11 years
24 between '95 and the Red Eagle Fire in '96 -- in 2006?

25 A. This is a chart provided by the BIA, if I

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1 remember correctly. It shows 4026 acres of hazardous
2 fuel reduction, and it shows 3428 acres of
3 wildland-urban interface fuel manipulation. So, a
4 little over 7000 acres, 7454 to be exact.

5 Q. And that's -- that's more acreage than -- than
6 you prescribe in your modeling --

7 A. Yes, sir.

8 Q. -- for the entire border.

9 A. Yes, sir.

10 Q. Are you critical of the acreage on this -- on
11 this chart?

12 A. Yes.

13 Q. I show --

14 A. When I --

15 Q. I show you Exhibit -- Defendant's Exhibit 124.
16 Can you pull that up.

17 Can you identify that?

18 A. Yes, sir.

19 Q. What is that?

20 A. That's Exhibit 124. I think it was provided
21 by -- was it Nelstead? I can't read the screen here.

22 Q. Um-hum.

23 A. But --

24 Q. It's in your booklet.

25 A. Yeah.

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1 Q. Or maybe it's not, but anyway, is this a
2 pictorial representation of what fuel treatments were
3 accomplished as represented in the -- in the graph on
4 Plaintiff's Exhibit 87-30?

5 A. As I understand it, yes.

6 Q. Where is the border that is depicted on
7 Defendant's Exhibit 124?

8 A. I believe it's that orange-ish/black line on the
9 far left that comes down right below the cursor. Come
10 on down, right -- there you go, and it runs up on the
11 Divide Mountain, I believe. See the orange there?

12 Q. Um-hum.

13 A. That should be the border.

14 Q. Okay. Are there any treatments in that area?

15 A. Not that I can see from this distance, no, sir,
16 or that I saw. Nothing looks like it -- no. There's
17 some fairly close there by the yellow, kind of in the
18 middle, but they're not right on the border. They're
19 not contiguous. That's just a little island of treated
20 stuff.

21 Q. In your review of the -- of the documents
22 produced by the United States, did you see any evidence
23 that there was a -- that there was a strategy to the
24 fuel treatments that are depicted on Exhibit --
25 Defendant's Exhibit 124 and that are reflected in

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1 Plaintiff's Exhibit 87-30?

2 A. I couldn't see any pattern to what they were
3 implementing at that time. I remember when I got the
4 GIS files from the tribal folks and input them into my
5 own GIS things, looking at how random it appears.
6 There's nothing that to me would be a contiguous fuel
7 break that would do much good, especially with a large
8 fire.

9 THE COURT: Mr. Schulte, looking at this
10 Defendant's Exhibit 124, how can you tell the areas that
11 have been treated?

12 THE WITNESS: The yellow outlines, there's some
13 orange-ish cross-hatches in there, sir. There's a
14 legend down at the bottom, down here, and it's very poor
15 on mine. I can't read it on the screen here, but that
16 legend right there shows you that there's the -- roughly
17 the year and what the project's name might have been.
18 For instance, Operation Clean Sweep would be that purple
19 reverse cross-hatch.

20 THE COURT: Thank you.

21 MR. ANDERSON: Your Honor, we've got this blowup
22 if you want.

23 THE COURT: We've looked at it a few times now,
24 and you all are telling me what it shows, but I -- I
25 can't -- I can't decipher what you're talking about,

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1 so...

2 MR. ANDERSON: It's -- I think what we'll do
3 maybe at lunch is make a photo -- make a -- go to
4 Kinko's and make a better copy so it's easier for...

5 BY MR. ANDERSON:

6 Q. Mr. Schulte, would a prudent fire manager,
7 recognizing the risk of a fire coming -- originating in
8 Glacier National Park over the boundary, design fuel
9 breaks represented in Defendant's Exhibit 124?

10 A. No.

11 Q. What would a prudent fire manager -- fuels
12 manager -- how would one design the -- the -- a fuel
13 break to protect the Tribe's forests from a wildfire
14 originating in Glacier?

15 A. I would envision a more contiguous line of
16 treatment adjacent to or right on the border, preferably
17 right on the border, something that you could link
18 together or use as a continuous safe area to work from.

19 Q. Could you take advantage of the natural
20 landscape barriers there?

21 A. Sure.

22 Q. And what is the most obvious natural landscape
23 barrier there?

24 A. You've got the flanks of the mountain in the
25 lower left corner, they're barren, and then you have

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1 stream courses and so on that -- the vegetation
2 typically in a stream course is moister, cooler, and it
3 won't carry fire nearly as readily. Some of that I'm
4 pretty sure is aspen, which historically we've used to
5 slow fires down, because, again, it's a moist site and
6 it doesn't have the fuels.

7 But you could use meadows, aspen, unburnable
8 features such as, you know, the rocks. The highway
9 could be part of it, too. You could use that as an
10 ingress/egress route safely for your firefighters to get
11 in and out quickly if you had to. That's a long ways
12 from the border in some places.

13 Q. Did you -- did you assess in this case whether
14 the Tribe and the BIA could adequately protect the
15 Tribe's interior forest?

16 A. Statistically, they were right on the national
17 average of about 97, 98 percent of their fires were kept
18 at ten acres or less in the time frame that I looked at.
19 So, for the vast majority of the fires, yes, they could.

20 Q. And if you were designing a strategic fuels
21 management program, would you design it with that in
22 mind?

23 A. Yes.

24 Q. And is the fuels treatment reflected on
25 Defendant's Exhibit 124 designed with that in mind or is

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1 it -- or is it just designed -- does it appear to just
2 be haphazard?

3 A. I see no rationale to what they did other than
4 road access. It was easy to get to. And I don't see
5 any rationale or cohesion that would give you an idea
6 that those could be linked easily into a fuel barrier or
7 a shaded fuel break.

8 Q. Would a prudent fire manager take into
9 consideration the landscape features in the development
10 of a fuel program?

11 A. Yes, sir.

12 Q. Did -- what was your -- what was your hypothesis
13 in this case?

14 A. My hypothesis was that a fuel conversion along
15 the boundary could have impacted a fire similar to the
16 Red Eagle Fire, and it could have changed the outcome or
17 at least the amount of impact to the tribal forest.

18 Q. Did you test that hypothesis?

19 A. Only on a computer model.

20 Q. And tell us how that -- how you tested that
21 hypothesis.

22 A. As I said before, I built my landscape file
23 using LANDFIRE data, historical weather data, and the
24 digital terrain information. I then put in the
25 shapefile that showed me the final perimeter of the Red

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1 Eagle Fire so I could place where I thought it was
2 supposed to be. I then looked at the investigation
3 reports because everybody said it started the 28th, and
4 the investigation reports that I was provided by the
5 Government showed that and referred to hikers in the
6 area of Red Eagle Lake and the suspension pit smelling
7 smoke on the 26th. The lightning was reported the
8 25th -- the 24th and 25th, I believe, by other campers
9 in the area. There were no campfires in Red Eagle
10 Campground on those days according to the witnesses.
11 So, the fire started the 26th. I figured it smoldered
12 for day or two.

13 Also, there was no defined or proven point of
14 ignition, and I was not trying to replicate the Red
15 Eagle Fire exactly. I was trying to get something
16 similar and a simulated fire only. I chose to put the
17 point of ignition a little bit closer to the boundary on
18 the second duration, I believe, and left it there.

19 Q. Did you go through -- I mean, we've -- the
20 inputs that you put into your programming included what?

21 A. I included, again, the historical weather from
22 both St. Mary's and Browning. I had to use the Browning
23 wind stream because I did not have hourly readings from
24 St. Mary's at that time. The LANDFIRE database from
25 2001 that I chose to use with the 13 Anderson's fuel

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1 models on it. The GIS files that I was provided by the
2 Tribe to show the final outcome or perimeter of the Red
3 Eagle Fire so I could use those as barriers.

4 In FARSITE, if you don't have a barrier, the
5 fire will spread in whatever direction it wants to,
6 following the fuels and topography, and with the wind --
7 and, of course, it's a model, and I think it's been said
8 that all models are wrong but some are useful. It's
9 just a model. That's all it really is.

10 It gives you a fairly good idea or estimation of
11 what the outcomes could be, but it will burn -- it may
12 not necessarily mimic what happened in reality, such as
13 the Red Eagle Fire. So, I used the suppression lines as
14 impermeable barriers to force it toward the Blackfeet
15 boundary.

16 Q. Now, let's go to Plaintiff's Exhibit 87-14.

17 A. Yes, sir.

18 Q. Is this an example of what you're talking about
19 here?

20 A. Yes, sir. The orange is the polygons for fire
21 spread, for growth in FARSITE -- sorry, the purple. The
22 orange outline that's kind of faint there is the actual
23 fire perimeter according to the GIS files I was given,
24 and it's based on a topo map that, again, I used in GIS
25 that reflected what the area looked like along the

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1 tribal boundary there.

2 Q. And does the topo map depict the elevation
3 changes in that area?

4 A. Slope and elevation. The white is typically
5 nonforested, nonvegetation, and green is usually
6 forested.

7 Q. So, you say you had to put -- you had to put
8 some boundaries around the fire.

9 A. Um-hum.

10 Q. What are you talking about there?

11 A. Well, you see that large fish hook in the
12 bottom, that's a purple line there that looks kind of
13 like a fish hook or an inverted V right there? Yes,
14 thank you. I put that in because it kept spotting over
15 that portion of the model and burning -- slowing some of
16 my resources down in my computer, because it's
17 intensive, and I just tried to limit it that way. I
18 wasn't concerned which way it spread in the model other
19 than toward the boundary.

20 Q. And then what else does this example show?

21 A. If I remember correctly, those are six-hour
22 intervals for fire progression, so each of those purple
23 lines is about a six-hour modeling of what the growth
24 and forward rate of spread was in FARSITE and shows a
25 progression from the point of origin, which I've

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1 identified with that arrow, and -- right there, thank
2 you. And the dotted line there, as I also pointed out,
3 is the reservation boundary, and it shows it impacting
4 the boundary and crossing it with no treatment on either
5 side.

6 Q. So, basically, this example is a fire model that
7 has no treatment on it at all.

8 A. Yes, sir, no treatment.

9 My copy is -- I have no color on the copy, so I
10 can't see what --

11 Q. Yeah, that's the problem with these. Our copies
12 here have -- have --

13 A. Because in the other -- yeah, in the other --

14 Q. Okay, here they are over here.

15 A. -- should have a barrier. That's what I'm
16 missing. I believe in this one, the -- okay, there
17 should be a barrier that would be a very faint orange.
18 I was looking at the caption going, wait a minute, there
19 are changes in that one.

20 MR. ANDERSON: I've got one for the Judge.

21 BY MR. ANDERSON:

22 Q. Did you attempt to do a model that simply
23 depicted the fuels treatments in the area?

24 A. Yes. And what I need to have you do is back up
25 to 87-13, please.

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1 Q. Okay.

2 A. Okay, that 87-13 shows that area that I
3 portrayed as a Fuel Model 8 change on the very western
4 edge of the Blackfeet Reservation against the boundary.
5 Model 6 or Figure 6, 8-14 [sic], shows how the fire
6 burned into that strip only on the Blackfeet Nation side
7 and still passed through it.

8 Q. What I want you to show is -- do you have a --
9 do you have a model that simply shows the actual
10 treatments that were done as opposed to the ones that
11 you propose?

12 A. Ah, no.

13 Q. Okay.

14 A. I have an example of some intermittent fuels
15 that I treated in the next one, which should be 8-15
16 [sic].

17 Q. Okay. That's the one I was talking about.

18 A. Yeah. That shows polygons of, you know,
19 hypothetical fuel treatments.

20 Q. Go to 87-15.

21 A. There you go. The 87-15, the orange is areas
22 I've tried to treat as a Fuel Model 8 but not have them
23 contiguous. And then Figure 8 on the same page shows
24 the outcome --

25 Q. Go to the bottom of the page, please.

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1 A. -- right there. And what I tried to point out
2 in this one, the dark blue polygons are where the fire
3 slows way down and moves through those treated areas of
4 Fuel Model 8, but the primary carry being Fuel Model 10
5 around it, it flows around it on all sides and proceeds
6 out -- the straight line to the far right, that's where
7 it ran out of the landscape file I produced for this
8 example. So, there is no fuels to burn past that
9 straight line in the model.

10 Q. Okay. Is that -- is that an example of how a
11 haphazard modeling program would affect a fire?

12 A. Yes, and I think these polygons I created are
13 even larger than the ones that -- some of the ones that
14 were put in place by the BIA.

15 Q. Now, did you -- did you do a model -- and we
16 probably need to go to Exhibit -- well, let's go to --
17 let's go to Exhibit 87. That was your third model,
18 right?

19 A. Yes, sir.

20 Q. Okay. Let's go to your fourth model.

21 A. Okay. So, that would be Figure 9, 87-16.

22 Q. Right.

23 A. Okay.

24 Q. Tell us what you did with this particular model.

25 A. In this particular model, I made a mistake. I

1 want to be very blunt about that, and it's revealed in
2 my supplemental report. In this particular model, I had
3 not enabled spotting, but I put fuel treatments on both
4 sides of the border, and in the model in this case, with
5 no spotting enabled, it slowed down, and when it first
6 hit the Glacier Park side, at the half-mile boundary, I
7 thought I was good. I did not -- I was not. And as my
8 rebuttal or my supplemental report goes, I enable
9 spotting again and I redo it.

10 Q. What's the explanation for failure to enable
11 spotting here?

12 A. I wish I had a good one, but I don't. I just
13 didn't do it.

14 Q. I mean, is that an automatic process in the
15 planning process using this program?

16 A. No. You choose or not to use spotting, and you
17 choose the percentage of spotting that you enable in the
18 process. It's under the modeling portion of it, in the
19 drop-down menu.

20 Q. Let's go to your supplemental report now, which
21 is Exhibit 93.

22 A. Yes, sir.

23 Q. Now, before we get into this, this computer
24 modeling process that you have done, is this the type of
25 process that is done in the planning process for

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1 planning fuel treatments?

2 A. Yes, and it's changed a bit with the advent of
3 the Wildland Fire Decision Support System. It's more of
4 a cloud-based computing. I was doing all PC-based with
5 stand-alone programs like FARSITE, but WFDSS combines
6 FARSITE, FlamMap, and a probability model called FSPRO.
7 It's on the cloud basically. But in this case, I didn't
8 use it.

9 Q. Are these resources available to all fire and
10 fuel modeling or fuel treatment planners?

11 A. Typically, if you request access and you get the
12 training, you can use it, yes, sir.

13 Q. How long has it been available?

14 A. I think WFDSS came on board -- I could be wrong.
15 I think it was 2007, possibly earlier than that.

16 Q. What I'm talking about is just the FARSITE
17 computer modeling program and all of its ancillary
18 programs. How long have they been available for a fire
19 management officer for a forest to use?

20 A. Since 1995.

21 Q. And have they regularly been used by fire
22 managers in planning treatment programs?

23 A. Yes, sir.

24 Q. For how long?

25 A. I was actually doing that on the

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1 Beaverhead-Deerlodge in 1997 with the Centennial
2 Project, the Centennial Mountains. I used FARSITE to
3 look at the potential fire behavior down at the very
4 southern end where our forest ran into the Red Rocks
5 National Wildlife Refuge. So, it's been available since
6 the nineties.

7 Q. Are there specific resources that the United
8 States has for fire behavior, fire science, that people
9 who are managing forests have access to?

10 A. Yes.

11 Q. And what is that?

12 A. We have one of the best in the world here, the
13 Fire Lab in Missoula. There are other fire labs and
14 resource stations scattered about the nation that are
15 also funded by the Government, and they're all available
16 to state, private, and federal employees.

17 Q. Did you see any evidence in this case that
18 either the BIA or the Glacier Park utilized any of the
19 resources available here at the Fire Lab in Missoula?

20 A. In this case with the Red Eagle or in which
21 case?

22 Q. Before the Red Eagle Fire.

23 A. I've seen the -- actually, again, 1994, the
24 Starvation Creek Fire, we had FARSITE running up there.
25 I'm trying to think of other things in Glacier Park that

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1 I did between 1994 and last year. But, yes.

2 Q. What I'm talking about is in terms of fuels
3 treatment program planning. Was -- did you see any
4 evidence that either the Park Service or the BIA, with
5 respect to the Glacier Park/Blackfeet tribal border
6 area, utilized -- did they use any of those resources
7 that are available at the Fire Lab here in Missoula --

8 A. Not --

9 Q. -- to assess the fuels treatment program?

10 A. Not in the documents I reviewed, no, sir.

11 Q. All right. Let's go to your Exhibit 93.

12 THE COURT: Mr. Anderson, let's take a lunch
13 break at this point before we get into the specifics of
14 the supplemental report.

15 MR. ANDERSON: Okay.

16 THE COURT: We will reconvene at 1:30.

17 (Lunch recess, 12:23 p.m. to 1:30 p.m.)

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1 AFTERNOON SESSION

2 (1:31 p.m.)

3 THE COURT: Thank you. Please be seated.

4 You may go ahead, Mr. Anderson.

5 MR. ANDERSON: Thank you, sir. We've made a
6 color photocopy of Defendant's 124.

7 THE COURT: Okay. Thank you.

8 BY MR. ANDERSON:

9 Q. Mr. Schulte, I'd like to return to your original
10 disclosure at Exhibit 87-18.

11 A. Yes, sir.

12 Q. On 87-18 and 87-19, you have three figures.
13 What does each of those figures represent?

14 A. I looked at the entire border from the
15 international boundary with Canada down to about Green
16 Lake, which is approximately 70 miles of the common
17 border between Glacier National Park and the Blackfeet
18 Forest, and these three figures show the areas of Fuel
19 Model 10 that were identified in the LANDFIRE fuel model
20 layers that I used, and I suggested those as potential
21 areas for treatment along the entire border.

22 Q. And how many acres are they?

23 A. The total I came up with was 5834 acres,
24 including areas burned by the Red Eagle Fire.

25 Q. And do those acres strategically take advantage

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1 of the natural landscape features that offer barriers,
2 et cetera?

3 A. I haven't viewed these on the ground, only --
4 well, as I said, with geographical or GIS inputs and
5 satellite imagery. So, I can't say that they do. I
6 would try and tie them together where we could with
7 natural barriers, and I'm sure they're there, but I have
8 not visited all of them.

9 Q. Okay. Does that represent all of the acreage
10 that you would recommend -- would have recommended
11 treatments for before the Red Eagle Fire?

12 A. Yes.

13 Q. Does it include the areas on the other side of
14 the border or does it simply include the area on the
15 Blackfeet Forest side of the border?

16 A. My assumption was both sides, half a mile.

17 Q. And so this 5800 acres is -- includes both sides
18 of the border or just the Blackfeet side of the border?

19 A. It should be both sides, sir.

20 Q. Now, let's go to your supplemental exhibit or
21 your supplemental report, which is Plaintiff's Exhibit
22 93, and it's before you. What were you attempting to do
23 with this supplemental modeling that you did?

24 A. As I referred to before, I had not enabled
25 spotting in the last iteration I did in my first report,

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1 which basically proved my findings to be wrong, and I
2 needed to rerun it with spotting enabled to see if there
3 would still be the same impact with the fuel treatment
4 along the border with the Glacier National Park and the
5 Blackfeet Tribe, and I reran it with those things
6 instituted, spotting at 5 percent and everything else
7 was identical.

8 Q. When you used 5 percent, what was the basis for
9 that?

10 A. That was the default that showed up when I
11 started toggling on and off spotting in the program.
12 So, I stuck with it throughout.

13 Q. And is there a factual basis for that 5 percent?

14 A. No, sir, just it was the default at that time so
15 I stuck with it. I did not want to try and come up with
16 a number that said there was 1 percent or 3 percent or 8
17 percent, you know, spotting.

18 Q. What does the literature say with respect to
19 spotting?

20 A. As far as?

21 Q. What percentage of a spot will ignite into a --
22 into a fire?

23 A. That's more what would be called probability of
24 ignition, which is tied to fine fuels, and if you have a
25 probability of ignition of 90 percent, you could expect

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1 that you could have 90 percent of the spots start a
2 fire. If it's 30 percent, maybe 30 percent.

3 Q. What do the records in this particular case
4 show?

5 A. I didn't have any records really to go on. The
6 fire report said it spotted, both from Heinz's and
7 Stanich's team reports. They did not give me a
8 frequency. They did not give me anything other than an
9 estimate of up to a mile of spotting.

10 Q. With the temperatures and the winds on this fire
11 and the fuel model that this fire was burned through,
12 what would you expect a spotting rate to be?

13 A. There's a difference in what you're asking me in
14 what FARSITE would enable for spotting growth and what
15 you're implying, I think. I want to make sure I
16 understand your question.

17 You asked me if -- you're asking me if the 5
18 percent spotting growth that I chose in FARSITE would be
19 replicated somewhere in the literature of the Red Eagle
20 Fire?

21 Q. No, I'm asking a more general question.

22 A. Okay.

23 Q. That is, with respect to the temperatures in the
24 Red Eagle Fire --

25 A. Um-hum.

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1 Q. -- the winds and the fuels --

2 A. Um-hum.

3 Q. -- and the topography --

4 A. Um-hum.

5 Q. -- is there literature that indicates what the
6 spotting rate would be for such a -- for such factors?

7 A. It's more as -- I believe it's more tied to what
8 the materials are that are burning, what the tree
9 species are that are burning, rather than tree moisture
10 and temperatures. It's a combination of all those
11 things.

12 Q. All right. Add the -- add the --

13 A. Add the trees?

14 Q. -- add the trees.

15 A. Okay. I do not remember exactly what the
16 probability of ignition might have been for those days,
17 I would have to look at my records, but I would assume
18 80 percent plus, just as an assumption, I guess.

19 Q. So, if you are expecting an 80 percent plus
20 spotting rate and you are only enabling at 5 percent,
21 how does your -- how's your model work?

22 A. They are two different things we're talking
23 about, and I think that's the issue. When I'm
24 describing the 80 percent plus, that's the probability,
25 given everything else being equal, that an ember could

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1 start a spot fire. What -- the spotting growth that I
2 enabled, again, in FARSITE, that gives you a -- in this
3 case, 5 percent, as I recall, a 5 percent growth for the
4 spot. So, it -- it's quite complicated in the model,
5 but it increases the number of computations that the
6 FARSITE model has to do in order to compensate for the
7 number of spots you think are occurring. So, they are
8 two different things.

9 Q. All right. You are going to have to explain
10 that for us because that's not something that we're --
11 that we're understanding, at least I'm not.

12 A. Okay. Probability of ignition is a fireline
13 metric that we use to know what the chances are of --
14 and this is all spots, it's not, you know, necessarily a
15 mile ahead of the fire, or I might only be 100 feet in
16 front of the fire, and it's running unimpeded. So,
17 you're looking at a combination of fine fuel moistures
18 and the temperature and humidity, and you're determining
19 what, on a given day, you may have for probability of a
20 spot, if it occurs, starting outside the line.

21 And the -- as I understand it, the growth
22 simulation in FARSITE -- and I'm stretching here as I
23 think about this. I believe that what the 5 percent
24 growth in FARSITE does in the modeling is it allows 5
25 percent of those spots that are occurring, and the model

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1 is probably throwing more spots in than would normally
2 occur, to grow and become part of the spread rate of the
3 fire and contribute to the progression of the fire.

4 Q. So, let me see if I'm summarizing this
5 correctly.

6 A. Um-hum.

7 Q. If there are 80 spots that are -- that are -- or
8 embers thrown, your program -- you programmed that only
9 5 percent of that -- of those 80 spots would turn into
10 fires. Is that what you're saying?

11 A. Yes. Probability of ignition does not
12 necessarily mean that a spot will turn into a large
13 fire. It just means that a spotting could occur and
14 there may be some ignition. It doesn't mean that it
15 ends up being part of a growing fire necessarily.

16 Q. And many of the spots in this case were spotting
17 into the -- into the -- into the fuel treatment area
18 that you had described.

19 A. In the model, yes, sir.

20 Q. And what happens to the spots in those treatment
21 areas?

22 A. They don't propagate nearly as fast. There is
23 some propagation if there's no suppression on them, and
24 they will -- FARSITE assumes no suppression unless you
25 tell it there's suppression. And with nothing to impede

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1 the fire, it won't grow.

2 Q. Did you enable suppression?

3 A. I did.

4 Q. And what was the reason to enable suppression?

5 A. My whole premise was that with a mile-wide fuel
6 buffer, with the resources available with either
7 Stanich's or Heinz's team -- and I think I chose
8 Stanich's team on the 30th -- you could look at the
9 incident action plan division assignment lists and see
10 what was actually available.

11 FARSITE has a gaming program built into it where
12 you can input hand crews, dozers, retardant, engines,
13 all kinds of different suppression inputs, and you
14 assign them a line production rate based on the fuel
15 model which comes right out of the Fireline Handbook --
16 I took nothing but the defaults -- and you can basically
17 game to see if you can catch the fire as it grows with
18 the resources you have available.

19 Q. Were there adequate resources available based on
20 the records of the Red Eagle Fire once the fuel hit
21 the -- once the fire hit the fuel burn?

22 A. I could only use -- I would have to look at the
23 exact number again. I could not use all the resources
24 available with my computer and the processors I have. I
25 think I just overwhelmed the computing capacity of my

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1 personal computer. I could use, if I remember
2 correctly -- and I can look it up -- two dozers, two
3 hand crews, and I might have thrown a couple of engines
4 in there. Again, I could look at it if you would like
5 me to, but six or eight of the total resources that were
6 available. I have a resource list in my supplemental
7 report that's right out of the incident action plans.

8 Q. And was the resources that were -- that you
9 inputted into the program sufficient to enable
10 suppression?

11 A. Were they sufficient to catch the fire? In the
12 model, they did, but, again, I exceeded the capacity of
13 my machine as far as I could tell and couldn't replicate
14 it.

15 Q. What are the implications for exceeding the
16 capacity of your machine in this whole modeling process?

17 A. Well, it's a very complex set of equations going
18 on with 5 percent spotting enabled, and I believe
19 Dr. Finney backed it off to 1 percent because it would
20 process that much faster. So, I was using five times as
21 many spots or 4 percent more number of spots than
22 Dr. Finney did, and it significantly slowed down my
23 machine. It maximized the computing processes that I
24 had.

25 Q. Was the -- was -- would this overwhelm any

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1 personal computer?

2 A. I'm not real familiar with the new ones, but it
3 would strain them, I believe. A supercomputer, no, but
4 an individual PC, I believe it would be difficult to do
5 all this.

6 Q. And is the computing capacity available at the
7 National Fire Lab here in Missoula?

8 A. I'm sure it is.

9 Q. So, with those constraints on your modeling --

10 A. Um-hum.

11 Q. -- what did your modeling show?

12 A. My model showed that it did continue to grow
13 into the proposed treatment area, and if you look at --
14 let's see, it's the most descriptive -- 93-5, Figure
15 2 --

16 Q. Let's first start at 93-3.

17 A. Okay.

18 Q. What were you showing there?

19 A. That's an output file from FARSITE that shows
20 the flame lengths that are predicted in FARSITE.

21 Q. Okay. Tell us what the polygons there show
22 there.

23 A. Okay. This is Figure 1? Yeah. That I burned,
24 if I remember correctly -- and I can look to make
25 sure -- but that should be where I used the same initial

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1 inputs I had used before, with both fuel treatment zones
2 included, and it shows that without suppression, it does
3 burn through in that southeastern corner, it spreads on
4 through and does continue to burn onto the forest.
5 That's no suppression.

6 And those polygons, where it slows way down in
7 the orange area, and so the rate of spread and
8 everything like that is dramatically slowed as it hits
9 the Fuel Model 8. The wider spacing between the
10 polygons or lines, if you want, the blue lines indicate
11 faster rates of spread, a higher intensity fire.

12 Q. What I want you to do is tell us what each one
13 of those -- what a single poly -- you can use whatever
14 example you want, what one of those polygons represents.

15 A. That's the forward rate of spread in a given
16 time frame. I would have to look at my numbers again.
17 I believe I had six-hour -- I believe it was six-hour --
18 six hours between contours being drawn in FARSITE. So,
19 about six hours of spread, and the wider the distance
20 between the two contour lines, for instance -- let's
21 see, there's quite a big open area there -- I can see
22 that better, a little more left, a little more -- right
23 there, that's a huge jump in there in six hours. That's
24 a very rapid spread.

25 If you move just a little bit more to the red,

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1 into the orange, you'll see that the lines are very,
2 very close. You could liken it to the topo map, the
3 topography map. The closer the lines are, in this case
4 the slower the spread. The wider the distance between
5 the lines, the faster the spread.

6 Q. All right. Let's now go to 93-5, Figure 2.

7 A. Okay.

8 Q. What does that -- what does that depict? What
9 does that show?

10 A. That's the same inputs again except this time I
11 enabled the suppression forces that I have listed, and I
12 started, if I remember correctly, two dozers, two hand
13 crews, and I think maybe two engines at the very top by
14 St. Mary's, along the edge, where I considered the
15 fireline to be constructed, right up against the orange.
16 I waited until it hit the buffer.

17 Then I also started a pair or the same number of
18 resources down in the lower right corner where it says
19 "SE most spot," that box down -- no, further south,
20 right against the orange buffer, right in the corner,
21 down, left -- there you go. Right in that area is where
22 I started the others in a classic -- just trying to
23 pinch it off, as we would call it, a pincer movement to
24 start from two sides of it and slowly try to cut it off,
25 because you want to start from where it's safe to build

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1 a fireline, not in the middle.

2 And in this case you can see the bulges -- there
3 are some little spot fires that creep through the
4 initial line, but it catches them, and --

5 Q. Can you show us what the bulges are you're
6 talking about?

7 A. See where it says "Northern most spot," and it
8 looks like a "D" or a "P" right there? The initial
9 fireline was left of that where it's a solid blue, and I
10 did spot and move across that, but the suppression
11 forces still caught it. It backed up and went and
12 caught them.

13 And the next two little bubbles that are right
14 there and right there (indicating) are two more spots
15 that -- again, it's simply in the gaming. It's a game
16 in FARSITE. It didn't catch them. And I think one of
17 the -- one of -- I think the middle one perhaps might
18 have been the one that came close to burning out of
19 that -- you know, when I shut down the time on it in ten
20 days.

21 Q. So, what did you use ten days for?

22 A. I wanted to see strictly how long it took to
23 reach the boundary between the Park and the BIA. I
24 wasn't concerned what happened after it got through
25 that, because we know what happened. I wanted to model

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1 what could have happened, potentially, in a fire similar
2 to the Red Eagle.

3 Q. Were the resources that -- the suppression
4 resources that you applied in this model available to be
5 applied?

6 A. I only took what was listed in the incident
7 action plans. I did not use anything else. In fact, I
8 did not use all the resources.

9 Q. When you say you took what was available in the
10 incident action plans, what do you mean there?

11 A. That's the daily listing of assignments for
12 Divisions A through Z, depending on the size of the
13 fire. They are listed in each of the incident action
14 plans, daily sheets in the records. We had those in the
15 final fire package and the information provided to us by
16 the Government, and I think I referred to them in the
17 report here. I've got some cites for where we were.

18 93-3, and it's line -- it will be the first
19 paragraph, the last line, I list US-BLF027971, 72. I
20 looked at the resource assignment list for July 30th,
21 31st, and 1st.

22 Q. When did your fire cross the -- well, is it
23 relevant in your modeling, per se, when the fire, your
24 particular fire, crosses the border?

25 A. If I had been trying to replicate exactly the

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1 Red Eagle Fire, it would be relevant. I was not. I
2 wanted to simply look at what would happen when a fire
3 of similar intensity and size entered a fuel treatment
4 zone like we were prescribing.

5 Q. And when you say "similar treatment [sic] and
6 size," you're talking about wind speeds and -- what
7 else?

8 A. Similar intensity and size, meaning flame
9 lengths, wind speeds, rates of spread would be similar.
10 I have a tough time saying that a 100-foot flame length
11 is any less than a 150-foot flame length personally. I
12 have been in front of both of them. They look very big
13 to me, and I don't differentiate. They are too large to
14 be in front of you.

15 Wind speeds, again, were historic. When I took
16 off the weather stations, the fuel moistures as recorded
17 from the weather stations, those were things I used that
18 were similar -- sorry, that occurred at the time of the
19 Red Eagle Fire.

20 Q. When you say -- you used the term "historic."
21 Are you talking about -- what do you mean by the use of
22 the term "historic"?

23 A. Historic weather records?

24 Q. Yeah.

25 A. Oh, that was the archived weather data in the

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1 National Weather Archives from the remote automatic
2 weather stations that were onsite at St. Mary's and
3 Browning.

4 Q. You're not using the term "historic" to mean
5 never seen before, are you?

6 A. Oh, no, sir. I'm just looking at the archived
7 data, not at 1910 winds or something of that nature. I
8 didn't enter that in.

9 Q. Are the winds that you are using typical winds
10 for this period of time on a yearly basis?

11 A. I would say yes.

12 Q. Okay. What you were doing basically is throwing
13 a high-intensity fire in Model 10 fuel conditions with
14 high winds at this fuel break.

15 A. Yes, sir.

16 Q. And basically trying to see what it would do.

17 A. Yes, sir.

18 Q. Is that what a fuels planner and a fire manager
19 would do before a fire?

20 A. I think so. I think that we use -- well, I've
21 been retired since 2003 and I still say "we," but the
22 Forest Service and the Government typically used
23 historic fires as a metric to measure against what you
24 may have for a treatment, and I think that anyone who
25 does any planning without looking at historic fires and

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1 the probabilities is missing a rather important part,
2 because you need to look at the extreme end of things,
3 too.

4 Q. Is that what you did when you worked at the
5 Beaverhead-Deerlodge Forest?

6 A. Yes.

7 Q. You used this same type of planning approach?

8 A. Yes.

9 Q. Let's go now to Defendant's -- Plaintiff's
10 Exhibit 93-6, Figure 3.

11 A. Okay.

12 Q. What is represented here?

13 A. That's a flame length output from the FARSITE
14 model, the same thing that I ran when I do the
15 suppression, and it shows in this case that the flame
16 lengths, which are in red -- and this was in meters at
17 the time -- up to 137 feet dropped down to about a foot
18 where it turns black, and that's in the treatment areas.

19 Q. And when they drop to -- I mean, what's the
20 maximum flame lengths you have here in this model?

21 A. That I found in the polygons I queried, 137 feet
22 or 42 meters.

23 Q. Is that consistent with what was seen on the Red
24 Eagle Fire?

25 A. Yes.

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1 Q. Are those flame lengths flame lengths that
2 are -- that are consistently at that level or are they
3 inconsistent over a period of time?

4 A. "At that level" meaning in a crown fire?

5 Q. Yes.

6 A. Okay. Again, it depends -- it depends upon what
7 vegetation you're burning it in, but in the canopies
8 that are there, that are 60 to 80 feet tall, yes.

9 Q. And what happened to the fire when it first hit
10 the fuel treatments that you show here in terms of flame
11 lengths?

12 A. As you can see, where it hits the fuel
13 treatments, where it intersects that orange boundary and
14 turns black, again, that drops down to that three-tenths
15 of a meter, about a foot flame length.

16 Q. And what is enabled in terms of suppression when
17 flame lengths are one foot?

18 A. You can actually do a direct attack in a
19 one-foot flame length. Our metric is four-foot for hand
20 crews, and that's the most heat. Four feet equates
21 roughly to 100 Btus per second per foot of energy
22 released on the fireline. So, up to four feet, you can
23 actually walk up next to it and work on it. It's hot.

24 If it's over about eight feet, then you're
25 starting to exceed what you can do with a bulldozer,

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1 typically, or mechanized equipment. So, in this case,
2 it drops down to about a foot, and with no separation
3 distance from the front of the fire, you would be able
4 to, I think, successfully get in there and work on it.

5 Q. Were there -- were -- do the temperatures --
6 when it hits that border, are they -- do they show --
7 are those shown to be dropping as well?

8 A. Well, the intensity has dropped because the
9 fireline -- the fireline -- the flame lengths drop, yes.

10 Q. And does this -- does this Figure 3 show
11 suppression --

12 A. Yes.

13 Q. -- or just flame lengths?

14 A. You can see the purple kind of mishmash at the
15 top of the "P" there, that's where different forces went
16 different ways, and then those blue lines that are
17 around the edges -- not those, sorry, that's the
18 existing, historic firelines, but to the right of
19 that -- those purple lines or dark blue, those are the
20 modeled suppression lines that FARSITE put in.

21 Q. And were the suppression resources that you put
22 into this model available to be used?

23 A. As I said, yes.

24 Q. So, let's go back and ask you, what are your
25 primary opinions in this case?

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1 A. My primary opinions are that with well thought
2 out and planned fuel management along the boundary
3 between Glacier National Park and the Blackfeet Tribal
4 Forest, we could lessen the impacts -- we won't stop the
5 fires, we will slow them down -- but we could lessen the
6 impacts of a large fire, such as Red Eagle, coming at
7 the tribal resource, which is a very small resource
8 compared to the parks or the adjacent Lewis and Clark or
9 my old home forest, the Beaverhead-Deerlodge, much
10 smaller.

11 Q. Let me ask you a more fundamental question.
12 Were the fuel treatments that were in place at the time
13 of the Red Eagle Fire adequate to protect the Tribe's
14 forest?

15 A. No.

16 Q. Why is that?

17 A. They were too small. There was no cohesion, no
18 strategically planned and oriented set of units or
19 modified fuel areas that I could find.

20 Q. Okay. What's your next primary opinion in this
21 case? Well, let me help you.

22 A. No, it's okay. My next primary opinion in this,
23 I think, would be that it would be a safe place to put
24 folks to work and would protect them from the impacts of
25 a crown fire.

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1 Q. Is your opinion -- tell us one way or the other
2 if strategically placed fuel breaks, as you described,
3 would have been effective to enable suppression in a
4 fire such as the Red Eagle Fire.

5 A. Yes, sir, I think so.

6 Q. Why is that?

7 A. Because, again, the intensity drops, the flame
8 lengths drop, the rate of spread significantly drops, so
9 the intensities go way down, and you can -- within a
10 shaded fuel break like that, I would envision being able
11 to use area resources a whole lot more readily. It's
12 not a closed canopy, so more of the retardant or water
13 would actually reach the ground and be more effective.

14 If you are trying to put retardant into a very
15 heavy lodgepole canopy, there's a percentage of it that
16 never reaches the ground, and sometimes that's fairly
17 high. If you can open up the canopy and get more to the
18 ground, and the fine fuel is what you're trying to
19 change the characteristics of, then that would be a
20 whole lot more probable in this case.

21 Q. Do you have an opinion as to whether or not the
22 United States was prudent in the assessment of the risk
23 and planning for the risk of a large fire crossing from
24 the Glacier National Park into the Tribe's forest?

25 A. I do not think they were prudent in that, no.

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1 Q. And why is that?

2 A. Because they didn't do it. It was never
3 planned, that I could find, no records that I could find
4 either from the Tribe, the BIA, or Glacier National
5 Park, that spoke to and planned for and actually began
6 to implement any kind of a treatment package along that
7 border.

8 Q. Now, I'd like to now go to some of the criticism
9 of your modeling. You've read Dr. Finney's criticism of
10 your modeling, haven't you?

11 A. Yes, sir.

12 Q. What -- how do you respond to his criticisms
13 with respect to the question of whether -- whether you
14 were -- you had -- you had started the fire on the right
15 day, at the right location, et cetera, et cetera?

16 MR. BAIR: Your Honor, we object to this.
17 Mr. Schulte has never submitted a rebuttal expert report
18 in response to Dr. Finney's modeling, his two expert
19 reports in rebuttal to Mr. Schulte. The Plaintiff never
20 asked to, and any opinions about Dr. Finney's work have
21 been completely undisclosed under Rule 26(a)(2).

22 THE COURT: Mr. Anderson?

23 MR. ANDERSON: That is true, Your Honor, and we
24 were basically operating under the court-ordered
25 schedule for disclosures that we were given.

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1 MR. BAIR: And as the Plaintiff demonstrated,
2 they were fully capable of moving to alter that
3 schedule, when necessary, as they did with Mr. Schulte's
4 third report in this case. If they felt it was
5 necessary to submit rebuttal opinion at a later date,
6 they could have asked to do so again.

7 THE COURT: Yeah, I am going to sustain the
8 objection.

9 MR. ANDERSON: Okay.

10 BY MR. ANDERSON:

11 Q. Go to Plaintiff's Exhibit 93-5.

12 A. Yes, sir.

13 Q. Now, can you identify on that -- on the figure
14 shown there, Figure 2, where Red Eagle Lake is?

15 A. It's that blue orb that's kind of -- right
16 there, um-hum.

17 Q. Is that -- is that where -- where -- in the
18 general vicinity of the ignition of the fire?

19 A. Of my ignition or the reported ignition?

20 Q. The reported ignition.

21 A. I believe it is.

22 Q. Where is your ignition?

23 A. Do you see where it says "Modeled point of
24 origin," that black right there? Right in that area
25 (indicating).

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1 Q. And why did you ignite the fire there?

2 A. Again, like I said, there was no verified,
3 proven point of ignition. I think there were two
4 potential lightning strike trees that were identified in
5 the investigation reports, and also someone said it
6 could have been a campfire. So, there were two
7 different opposing reports on that.

8 And, again, I wasn't trying to model the Red
9 Eagle Fire exactly. I wanted to get one that was
10 similar. So, I put it a little bit to the east of Red
11 Eagle Lake and figured if it was a little bit closer to
12 the boundary, it would still burn.

13 Q. And what's the effect of putting it closer to
14 the boundary rather than farther away?

15 A. In the model, not a whole lot. I mean, it still
16 spreads -- the first polygon that intersects the fuels
17 treatment -- I can't show you on this one exactly, but
18 the timestamp on it from the FARSITE output files was
19 about 1800 on July 29th. So, it would hit that first
20 orange treated area there in the Glacier National Park.
21 So, it's relatively similar to the Red Eagle Fire and
22 its spread rates.

23 Q. When did your fire hit the treatment area?

24 A. Like I said, 1800 on the 29th, the very -- it
25 would be the southeast corner there. I could -- I can't

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1 pull it up for you on the screen, but into the green a
2 little -- no, to the left. Right in there somewhere is
3 one of the first polygons, and they are stamped with a
4 date and time in six-hour increments. The closest one I
5 could find was at 1800 on the 29th.

6 Q. And what was the wind speeds at that time?

7 A. I would have to look back in the model. I don't
8 remember, to be honest. They did subside dramatically
9 at 2:00 a.m., according to the investigation reports and
10 to -- and incident action plan reports and so on. So, I
11 know that they were reported as being quite a bit higher
12 up until 2:00 a.m., but I honestly couldn't tell you
13 exactly what they were in the model right now.

14 Q. But at the time that your model did hit the
15 treatment areas --

16 A. Um-hum.

17 Q. -- were the wind speeds high?

18 A. They were recorded at Browning, and I used
19 those. So, yes, they were high. Again, I can't give
20 you the exact numbers, Mr. Anderson.

21 Q. Was that before the wind -- I mean, those wind
22 speeds dropped after your model hit the border.

23 A. According to the reports I read, about 2:00
24 a.m., yes, sir.

25 Q. And so your model hits the border before the

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1 wind speeds drop.

2 A. About eight hours before the wind speeds drop.

3 Q. And in this model, is there any assessment of
4 canopy spacing in your modeling?

5 A. I did not change the canopy spacing in my model.
6 I left that intact with what was shown in the Fuel Model
7 8, in the models, and I left the 10 alone. I did not
8 want to get into the subjectivity of how much to open it
9 up. Some of the information I was able to get would be,
10 like, the LANDFIRE file that showed, again, a satellite
11 imagery estimating the canopy closure, and without being
12 on the ground, I couldn't tell you if it was 20 or 30
13 percent.

14 Q. Is a satellite image of canopy spacing an
15 accurate image of canopy spacing?

16 A. I don't think it is.

17 Q. In the modeling process, do you have to take
18 that into account?

19 A. If I choose to.

20 Q. Did you do that here?

21 A. I did not. I said I wanted to mimic the results
22 of something similar to a Fuel Model 8, and I suggested
23 a Fuel -- a spacing in the canopy of 14 to 20 feet to
24 replicate what is Firewise fire safe spacing, typically,
25 and has been shown in some of the other literature. I

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1 did not do it.

2 Q. And the reason you did not do it is because you
3 did not want to introduce subjectivity into it?

4 A. That's correct.

5 Q. And is there any way to objectify canopy spacing
6 in a modeling circumstance such as this?

7 A. You can do a mathematical exercise based on,
8 again, satellite imagery and what you think might be in
9 the stand, but I prefer to walk through it, take a look
10 at it, or get the forest inventory. If there's a forest
11 inventory file that gives me that, I'll use that, but I
12 did not get those.

13 Q. Did you use the forest inventory when you were
14 originally inputting the data with respect to the cover
15 types, et cetera?

16 A. I did. I used Pete Sawyer's analysis. I
17 believe that was 2007. I would have to look. It was
18 his forest inventory analysis for the Blackfeet Forest,
19 and I looked at his distribution of what percent of
20 cover types and habitat types there were across the
21 forest and the elevational ranges for the different
22 cover types.

23 Q. Just a second.

24 For the Court, let's go back on this diagram,
25 which is 93-5, and explain exactly what you're seeing on

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1 this diagram. Starting at the right-hand side, you
2 have -- you have green, right?

3 A. Yes, sir.

4 Q. What is that?

5 A. That's the -- that's a topographic map, number
6 one, and that is -- typically, in a topographic map like
7 that, green implies a forested cover. So, that would be
8 forest. And the elevation ranges in there I believe, if
9 I remember correctly, from the border up to about where
10 the cursor is range anywhere from zero to about 40
11 percent slope, not real steep.

12 Then if you move to the left, the orange is the
13 GIS and FARSITE interpretation of where I wanted to put
14 that Fuel Model 8, and the first one to the right of the
15 border is -- that one right there would be the one that
16 I put on the Blackfeet Forest side, and then to the
17 left, the next one would be what I put in the Glacier
18 National Park side.

19 And the blue dots, again, we have already
20 discussed are bulges. Those are spots or incursions
21 into the fuel treatment zone from that model fire that I
22 ran at it. The rest of that, the heavy double blue
23 lines all the way around the fire like that, those are
24 the GIS shapefiles provided to me by the Tribe and by
25 the final fire packages, with the exception of those

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1 triple lines just to the left of where the cursor is
2 right now.

3 I had to put a couple more barriers -- down,
4 please, down -- there and left, right there -- I had to
5 put a couple more barriers in there because it was
6 spotting, which is not atypical in the model, but I
7 wanted to force it toward the fuel treatment zone,
8 because that's more what the Red Eagle Fire actually did
9 and what a fire of this type would do.

10 Q. Does the -- does this map show the topography
11 within the fire perimeter itself?

12 A. If we zoomed in on it, yes, sir, it would.

13 Q. And what is that topography, generally?

14 A. Most of the area that I prescribed the fuel
15 treatment zone for runs from about 4000 feet to just a
16 little over 6000 feet.

17 Q. And what's the -- what's the slope differential
18 there?

19 A. I think it ranged anywhere from, like I said,
20 zero to about 40 percent, along that -- I believe that's
21 Divide Mountain in the very southeast corner.

22 Q. And what is the slope differential around Red
23 Eagle Lake?

24 A. I would have to look that up. Honestly, without
25 zooming in on that, I couldn't tell you right now. I

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1 would assume, again, in that 20 percent area. I wasn't
2 as concerned with where the fire had been as where it
3 was going into in the forest.

4 Q. What is the white areas on the -- on the -- on
5 the bottom side of the map? What do those show?

6 A. Right in there (indicating)?

7 Q. Yes.

8 A. That's barren. That means it's rock. It could
9 be talus and scree slides. It could be just high alpine
10 areas that don't burn typically, lots of rock, and
11 basically nonburnable.

12 Q. And up around your fuel model, on the bottom
13 side of that fuel model --

14 A. Um-hum.

15 Q. -- is that a rock outcropping there?

16 A. Where it says "SE most spot," between that and
17 the orange?

18 Q. No, on the other side, closer to the -- closer
19 to the fuel treatment area, the bottom.

20 A. Right in there (indicating)?

21 Q. Yes.

22 A. On the map and on the satellite imagery, that's
23 rock, yes, sir.

24 Q. Is that part of Divide Mountain?

25 A. Yes, sir.

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1 Q. And the -- and the large body of water there, is
2 that St. Mary's?

3 A. St. Mary's, um-hum.

4 Q. And so -- and in what direction is the wind
5 blowing on this model?

6 A. The predominant winds in this one is out of the
7 southwest, and that's channeling with topography, too.
8 So, the general wind may have been west, but the wind on
9 the fire is out of the southwest.

10 Q. Okay.

11 No further questions, Your Honor.

12 THE COURT: All right.

13 Cross examination.

14 CROSS EXAMINATION

15 BY MR. BAIR:

16 Q. Good morning -- good afternoon --

17 A. Yes, good afternoon.

18 Q. -- Mr. Schulte. We have a binder full of
19 materials.

20 MS. NAM: May I approach?

21 THE COURT: Yes.

22 MR. BAIR: Thank you. We also have copies for
23 the Court.

24 THE COURT: Thank you.

25 BY MR. BAIR:

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1 Q. Mr. Schulte, I'd like to start about talking --
2 start with talking about some of the bases for your
3 opinions. You testified earlier that at one point you
4 were employed with the Beaverhead-Deerlodge National
5 Forest. Is that right?

6 A. Yes, sir.

7 Q. In what role?

8 A. I was the assistant forest fire manager and fire
9 planner for the entire forest.

10 Q. And in that role, did you help design and
11 implement fuel treatments?

12 A. I helped design them in, again, the Pioneer
13 Mountains plan that we did, the Centennial plan. We
14 looked at the Metcalf Wilderness. Several times.

15 Q. And did any of the fuel treatments you were
16 involved with in the Beaverhead Forest actually meet
17 fire?

18 A. I'm trying to remember if the ones that I worked
19 with George Johnson around the Grasshopper Valley met
20 fire. They were after 2000. I would have to
21 double-check with folks since I left in 2003. I'd have
22 to find out. It's been a while.

23 Q. But as of right now, you don't have any specific
24 success stories from your work on that forest, of one of
25 these fuel treatments actually surviving a fire.

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1 A. No. Most of the treatments we were doing were
2 planning, looking into the future, and we were trying to
3 get there. So, we had them planned and implemented, but
4 we hadn't had them tested yet.

5 Q. So, you testified earlier about what BIA's
6 management goals should have been in managing the
7 Blackfeet Tribal Forest. Have you ever been a BIA
8 employee?

9 A. No, sir.

10 Q. Do you have any experience with what BIA's goals
11 are in management?

12 A. Only the fact that I've interacted with them in
13 doing fire program analysis/planning with them, which
14 basically comes up through their budgeting for fire
15 plans, and working with them on various fires, such as
16 the Livermore fire in 1994.

17 Q. And by the same token, you testified about what
18 Glacier National Park's management goals should have
19 been, didn't you?

20 A. Yes, sir.

21 Q. And have you ever worked for Glacier National
22 Park?

23 A. Actually, I did last summer on the Thompson
24 Creek Fire, and I have worked for them in, again, 1994
25 on the Starvation Creek Fire and other assignments

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1 between '94 and 2015. I would have to look back and see
2 what they were, but yes.

3 Q. But that was specifically in a suppression role?

4 A. Yes, sir.

5 Q. Have you ever been involved in fire planning in
6 Glacier National Park?

7 A. We had a dual role on the -- as I remember it,
8 on the Starvation and Livermore Fires, and I did work
9 with Laurie Kurth, who was the fire ecologist at that
10 time, short term on some of the planning projects. I
11 don't know what the status of those were.

12 Q. Let's see if we can be a little more specific.
13 Have you ever worked for Glacier National Park --

14 A. No, sir.

15 Q. -- in a management capacity?

16 A. No, sir.

17 Q. And do you have any particular expertise into
18 what Glacier National Park's goals are for its fire
19 program?

20 A. Only what's listed in the fire management plans
21 and the EA from Glacier National Park.

22 Q. Let's talk about some of the specific fires that
23 you used as examples of successful fuel treatments.

24 A. Um-hum.

25 Q. The Camp 32 fire, where was that?

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1 A. That was in Eureka, Montana.

2 Q. And that was predominantly in ponderosa pine?

3 A. Yes, sir.

4 Q. And is there any substantial amount of ponderosa
5 pine present in the area burned by the Red Eagle Fire?

6 A. Not on the east side, no, sir.

7 Q. And you talked about the Wallow Fire as well?

8 A. Um-hum.

9 Q. Where was that?

10 A. I believe that was in New Mexico.

11 Q. Okay. And was that also in ponderosa pine?

12 A. Ponderosa pine and mixed conifer.

13 Q. Okay. And is there -- again, you have already
14 said there's no substantial amount of ponderosa pine in
15 the Red Eagle Fire burn area.

16 And the last fire you mentioned, I think, was
17 the Little Wolf Fire. Is that right?

18 A. Um-hum, yes, sir.

19 Q. And you testified that the fuel treatments you
20 referred to there were actually clearcuts.

21 A. That was Dave Bunnell's report on the Little
22 Wolf Fire, and there was a selection of clearcuts and I
23 believe some partial cutting, but I would have to look
24 back to be absolutely honest.

25 Q. Based on your understanding, was it primarily

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1 clearcuts, though?

2 A. Again, I would have to refer -- I would -- I
3 can't say yes, I can't say no right now, sir. I'm
4 sorry.

5 Q. You're the one who said clearcuts earlier,
6 though. So, do you understand that there was an element
7 of clearcut to that fuel break?

8 A. Yes. You asked me how much --

9 Q. No, I just want to clarify. Okay.
10 With that in mind, are you proposing that either
11 the Bureau of Indian Affairs or Glacier National Park
12 should have implemented clearcutting to protect against
13 a fire like the Red Eagle Fire in this case?

14 A. I did not call for a clearcut.

15 Q. Okay. And I'd like to make sure I totally
16 understand the modeling and opinions you're expressing
17 today. You performed basically two different rounds of
18 modeling. Is that right?

19 A. Um-hum.

20 Q. The modeling expressed in your affidavit and
21 initial report --

22 A. Right.

23 Q. -- and those were based on the same modeling.

24 A. Yes, sir.

25 Q. And then a separate round of modeling that was

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1 reflected in your supplemental report.

2 A. Right.

3 Q. Great. Let's start off by talking about some of
4 the specifics with the Red Eagle Fire. Was the Red
5 Eagle Fire a sustained, wind-driven ground fire?

6 A. That's what the fire reports say, yes, sir.

7 Q. And does that match your understanding?

8 A. Yes, sir.

9 Q. Did the Red Eagle Fire involve high winds?

10 A. Yes.

11 Q. Did the Red Eagle Fire involve high air
12 temperatures?

13 A. Relatively high. I wouldn't say they were
14 extreme.

15 Q. But you believe they were relatively high?

16 A. Yes, sir.

17 Q. And did the Red Eagle Fire involve low humidity?

18 A. I think they were fairly average. They were in
19 the low tens and teens, if I remember correctly. I
20 would have to look it up, to be honest.

21 Q. Okay. When you were deposed in May of this
22 year --

23 A. Um-hum.

24 Q. -- which is Defendant's Exhibit 148 in that
25 binder --

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- 1 A. Okay.
- 2 Q. -- at page 53 --
- 3 A. Yes, sir.
- 4 Q. -- at lines 10 to 11, you agreed with me that
- 5 the Red Eagle Fire involved low humidities.
- 6 A. Yes.
- 7 Q. Does that refresh your memory?
- 8 A. Well, I'm not saying that 10 to 15 percent is
- 9 not low humidity. It is.
- 10 Q. Okay.
- 11 A. I was just giving you a figure.
- 12 Q. So, taking these facts together, would you agree
- 13 that the Red Eagle Fire involved severe weather
- 14 conditions?
- 15 A. Yes.
- 16 Q. Okay. During the first day after this fire was
- 17 spotted by Glacier National Park --
- 18 A. Um-hum.
- 19 Q. -- were there any successful suppression
- 20 actions?
- 21 A. No, sir.
- 22 Q. And I want to be clear that I'm talking about
- 23 July 28th here.
- 24 A. Um-hum.
- 25 Q. So, in your modeling, you did model some

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1 suppression lines, I believe to the west, north, and
2 south of the ignition point. Is that right?

3 A. Yes. Those were the historic lines that were
4 actually put into the Red Eagle Fire.

5 Q. Okay. When -- when -- what do you mean when you
6 say that?

7 A. Those were the recorded firelines that were in
8 the final fire package and provided to me by the
9 Government and by the Tribal Forest, because to do the
10 burn area emergency rehab, you have to show where the
11 firelines are.

12 Q. Okay.

13 A. So, somebody walked those and mapped them, and
14 that's where I got them.

15 Q. So, were those lines implemented in an effort to
16 suppress the Red Eagle Fire?

17 A. No, sir, just simply a barrier.

18 Q. They were implemented after the fact?

19 A. After the fact?

20 Q. I'm trying to understand what you mean by these
21 lines. What -- why were these put into place?

22 A. In FARSITE, typically what happened the first
23 time I burned this, it burned everywhere, and it had a
24 preponderance to the northeast, like I wanted it to,
25 toward the Red Eagle area or toward the fireline and the

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1 boundary, but in order to slow -- to speed up the
2 process around the machine by herding it or
3 encapsulating it in an impenetrable barrier, then all
4 the energy goes toward the forest.

5 Q. I see.

6 A. And it's not -- it doesn't change the outcome
7 other than it just forces it in a given direction.

8 Q. But those lines did serve to shape the simulated
9 fire.

10 A. Yes, sir, um-hum.

11 Q. I understand now.

12 Let's talk about the fuel models that you
13 discussed in your opinions.

14 A. Um-hum.

15 Q. You referred many times to the fuel models
16 described by Hal Anderson in a 1982 article. Is that
17 right?

18 A. Yes, sir, um-hum.

19 Q. And do those fuel types -- I'm sorry.

20 Are you familiar with the criteria for
21 distinguishing among those fuel types?

22 A. Yes, sir.

23 Q. And are those criteria exclusively based on
24 surface fuel conditions?

25 A. You're asking me if the -- Hal Anderson's models

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1 were built for surface fires?

2 Q. No. I'm asking you whether the criteria are
3 based on the condition of surface fuels.

4 A. Yes.

5 Q. They are?

6 A. Yes.

7 Q. So, you would agree that Anderson's 13 models
8 describe surface fuels.

9 A. Oh, yes, sir.

10 Q. Okay. Do they describe canopy conditions?

11 A. Not typically.

12 Q. Okay. Are you also familiar with the 40 fuel
13 types identified in Scott and Burgan's 2005 article?

14 A. Of course.

15 Q. And would you agree that those fuel types are in
16 use by fire behavior professionals?

17 A. Yes, sir.

18 Q. In fact, the LANDFIRE database you used
19 typically includes those fuel types, along with
20 Anderson's, doesn't it?

21 A. Like I said, I made the choice to use Anderson's
22 because that was more indicative of what the managers
23 before 2006 would have had to use.

24 Q. Would you agree that Scott and Burgan's 40
25 models represented the state of the art in describing

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1 fuel types?

2 A. They're a definite improvement, yes, sir.

3 Q. Okay. Would you agree that they're the state of
4 the art?

5 A. At this time, yes.

6 Q. Okay. And would you agree that those 40 fuel
7 models are more specific than Anderson's 13 models?

8 A. I'm not trying to be flippant, but there are 40
9 versus 13, so yes.

10 Q. I understand you.

11 Would you agree that those models are designed
12 to -- and I'm quoting the description of the models --
13 "increase the ability to simulate changes in fire
14 behavior as a result of fuel treatment by offering more
15 fuel model choices, especially in timber-dominated fuel
16 beds"?

17 A. I'd ask you to repeat that again, please.

18 Q. Sure. The quote from the Scott and Burgan
19 article -- and I'm happy to direct you to the original
20 source, if necessary -- is that the models are designed
21 to "increase the ability to simulate changes in fire
22 behavior as a result of fuel treatment by offering more
23 fuel model choices, especially in timber-dominated fuel
24 beds."

25 A. Yes, sir.

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1 Q. And would you agree that the Scott and Burgan
2 models, which you didn't use here, are more accurate for
3 describing fuel treatments than the Anderson models that
4 you used instead?

5 A. Again, I was asked to look back, and that's what
6 I used. I used the models that would have been
7 available to the folks at the time. So, I used the 13.

8 Q. Okay.

9 A. That being said, with the new models, in this
10 day and age, yes, they are a little bit more accurate.

11 Q. And certainly for modeling purposes, they're
12 more accurate.

13 A. As far as more variation and potential outputs,
14 if you want to call that accurate, I guess I could say
15 it would be more accurate with more variability.

16 Q. Okay, then.

17 Now, your original proposal included a
18 prescription for thinning the canopy --

19 A. Um-hum.

20 Q. -- of the trees within the fuel treatment to a
21 14-foot spacing, didn't it?

22 A. Um-hum.

23 Q. And at other times you described it as a 14- to
24 20-foot spacing.

25 A. In my supplemental, I went to 14 to 20, yes,

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1 sir.

2 Q. Okay. So, it's fair to say that your initial
3 proposal consisted of two different things: reducing the
4 surface fuels from an Anderson Fuel Model 10 to a Fuel
5 Model 8, and also implementing that canopy prescription.

6 A. I think what I was saying when I said mimicking
7 the Fuel Model 8 and opening up the canopy was, yes,
8 taking care of the surface fuels, and if the
9 prescription called for, with ground truthing, opening
10 up the canopy, then that would be an option.

11 Q. Okay. But did you explain that ground truthing
12 distinction in your initial report?

13 A. I did not.

14 Q. Okay. So, your initial report merely said that
15 the canopy should be thinned to a 14-foot spacing.

16 A. I suggested that, yes.

17 Q. And similarly, in your supplemental report, you
18 said it should be a 14- to 20-foot spacing.

19 A. I suggested that, yes.

20 Q. And you didn't specify that ground truthing
21 would be necessary to determine whether that should be
22 done.

23 A. I did not, but that's what a forester does.

24 Q. Okay. And despite the fact that you prescribed
25 this canopy thinning, you didn't model it in your

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1 FARSITE model.

2 A. I did not.

3 Q. Okay. And FARSITE is capable of modeling it.

4 A. It is, but I did not want to introduce that much
5 more subjectivity into it because it then becomes a
6 mathematical equation battle, and without being on the
7 ground and seeing it, I can't honestly say if a 14 to 20
8 would open it up X number of percentage or not.

9 Q. Is it fair to say that you have now dropped your
10 thinning prescription?

11 A. Dr. Finney's work on my modeling showed that it
12 does slightly increase the wind speeds and it does
13 slightly increase the rates of spread. If it would be a
14 detriment to the forest and to the fuel model or to the
15 fuel break, sorry, that is something that would be opted
16 out, yes, sir.

17 Q. So, you are now saying that the BIA and Glacier
18 National Park should not have implemented canopy
19 thinning.

20 A. I'm saying that if it's -- the area is -- again,
21 it goes back to having to walk the ground. I did a
22 modeling exercise remotely with one visit to the area,
23 trying to come up with prescription suggestions for
24 modeling on the area, without spending a lot of time
25 walking the ground, and that's difficult for a forester

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1 to do with any accuracy.

2 Q. But I just want to be totally clear. You are
3 expressing opinions here about what the BIA and Glacier
4 National Park should have done.

5 A. Yes.

6 Q. Are you now saying that they shouldn't have
7 thinned the canopy?

8 A. No, sir. I'm saying you need to look at the
9 ground and see what it needs. I suggested that canopy
10 opening, if needed.

11 Q. Okay. I'd like to refer again to your
12 deposition transcript. This is Defense Exhibit 153,
13 your second deposition from June.

14 A. Okay.

15 Q. If you would please refer to page 248 of that
16 transcript, starting on line 8 of page 248.

17 A. Okay.

18 Q. I asked you at that deposition:

19 "QUESTION: But you are now testifying that BIA
20 forest managers should not have implemented that crown
21 spacing. Is that right?"

22 And what was your answer?

23 A. I said "yes."

24 Q. Okay. So, is it true that you're now saying the
25 BIA forest manager should not have implemented a crown

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1 spacing prescription?

2 A. In this case my deposition said yes; I have to
3 stick with that.

4 Q. Okay. So, that is your opinion at this point?

5 A. Yes.

6 Q. But both of your expert reports that were
7 disclosed to the United States do include the crown
8 spacing prescription.

9 A. Um-hum.

10 Q. And you've never supplemented those expert
11 reports to drop that prescription.

12 A. No, sir.

13 Q. So, it's fair to say that there's a gap between
14 what you're now recommending and what you described in
15 your expert reports.

16 A. I think that there is more of -- I was going to
17 say difference of opinion, but that's not quite what I
18 want to try and bring forward to you. I think that the
19 entire planning process is trial and error. I made a
20 suggestion in the first prescription, and then evidence
21 shows that it may not be a good choice, and any good
22 manager is going to take a look at the options available
23 and make changes that are best for the forest.

24 Q. But your opinion, as expressed in your expert
25 reports and as you've expressed it today, is that the

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1 land management agencies here acted in a way distinct
2 from how a prudent forester should have by not
3 implementing these prescriptions. Isn't that true?

4 A. Yes, that's true.

5 Q. And your opinion about what prescription's
6 appropriate has changed since those reports.

7 A. Yes.

8 Q. Let's move on from this.

9 Is it your opinion that a wildland fire in a
10 Fuel Model 8 forest stand will not crown, even if the
11 canopy is not thinned to a 14-foot spacing?

12 A. No. It will torch occasionally.

13 Q. Okay, but it will not crown.

14 A. It will not carry a sustained crown fire
15 typically.

16 Q. Okay. And what's your basis for that opinion?

17 A. Experience, number one. Number two, Anderson's
18 own description of Fuel Model 8 talks about, you know,
19 occasional torches from heavy jackpotted areas, a
20 jackpot meaning large fuel accumulations.

21 Q. The second and third scenarios described in your
22 initial report --

23 A. Um-hum.

24 Q. -- were smaller treatments of Fuel Model 8, half
25 a mile wide and various dispersed polygons. Is that

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1 right?

2 A. I think you're confusing two of them. I had a
3 half mile wide, both sides of the forest boundary, and,
4 yes, I did have polygons on Fuel Model 8.

5 Q. Okay. And the fire, as you modeled it in
6 FARSITE, burned through those treatments, didn't it?

7 A. Through the polygons for sure, the smaller
8 polygons, yes.

9 Q. And you've testified that neither of those two
10 scenarios, the half-mile-wide treatment or the dispersed
11 polygons, was successful in stopping the fire.

12 A. On the Blackfeet side, no. On the Glacier Park
13 side, no, until I combined the two into one mile, yes.

14 Q. I understand. But those were reductions from
15 Fuel Model 10 to Fuel Model 8, weren't they?

16 A. Yes, sir.

17 Q. And despite those reductions, the fire still, in
18 those scenarios, burned through.

19 A. Yes, because FARSITE will continue to burn until
20 either it runs out of days and time or it runs out of
21 the landscape file.

22 Q. And is it your opinion that a Fuel Model 8 will
23 not present a hazard even with extreme weather
24 conditions?

25 A. Parts of a Fuel Model 8 could present a hazard.

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1 I'm not saying that's not true.

2 Q. Okay.

3 A. But the majority of the area, typically not.

4 Q. Okay. And do you believe that Anderson's
5 description of Fuel Model 8 supports that opinion?

6 A. Yes, sir.

7 Q. Okay. If you would turn to Plaintiff's Exhibit
8 5, which is in that book toward the back, and then turn
9 to page 11, please.

10 A. Page 11?

11 Q. Yes, sir, of Anderson's --

12 A. Um-hum.

13 Q. -- article. Is this an accurate copy, as far as
14 you can tell, of Anderson's 1982 article?

15 A. Yes, sir.

16 Q. And does this state, "Only under severe weather
17 conditions involving high temperatures, low humidities,
18 and high winds do the fuels pose a hazard," referring to
19 Fuel Model 8?

20 A. Yes, sir.

21 Q. And would you agree that the Red Eagle Fire
22 involved severe weather conditions?

23 A. I did already, yes, sir.

24 Q. And you also agreed that it involved high
25 temperatures, low humidities, and high winds.

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1 A. Yes, sir.

2 Q. Okay. So, would you agree that Fuel Model 8
3 fuels could pose a hazard under those conditions?

4 A. Again, though, I said that it goes to the --
5 where is it? -- "fire may encounter an occasional
6 'jackpot' or heavy fuel concentration that can flare
7 up." And, yes, you can have -- with the very, very
8 extreme weather conditions, you can have a little bit
9 hotter fire in a Fuel Model 8, yes.

10 Q. But Mr. Anderson specifically -- maybe
11 Dr. Anderson -- specifically describes the fuels as a
12 hazard under those conditions. Isn't that true?

13 A. Well, sure. Any time you have a flame length
14 over about four feet, it's a hazard to people.

15 Q. Okay. Does anything in that definition of a
16 Fuel Model 8 state that a Fuel Model 8 fuel break will
17 stop a fire from crowning?

18 A. Not in this written definition, no.

19 Q. Okay. And that is Anderson's definition of his
20 own fuel model.

21 A. Yes, sir.

22 Q. Are fuel breaks generally designed to stop fires
23 completely or to create a defensible space for
24 suppression forces?

25 A. In my mind, a defensible space for suppression

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1 forces. You can't stop a fire completely.

2 Q. And in this case you specifically found that
3 your fuel treatment wouldn't stop the fire completely
4 and that suppression forces would need to then attack
5 it. Isn't that true?

6 A. Um-hum.

7 Q. Let's talk a little bit about the specifics of
8 your proposal. Have you determined in any way how much
9 fuel would need to be removed to implement this
10 reduction from Fuel Model 10 to Fuel Model 8?

11 A. I think we covered this in my deposition a
12 couple of times, and, no, I have not.

13 Q. Okay. I think you are going to find today we
14 might be covering a lot of things we talked about in
15 your deposition.

16 Did you assess in any way how to dispose of five
17 square miles of surface fuels that you're proposing for
18 reduction?

19 A. I didn't look at how to do that, no, sir, in the
20 3200 acres.

21 Q. Is it fair to say that prescribed burns might be
22 necessary to reduce those surface fuels?

23 A. Yes.

24 Q. And have you analyzed in any way whether those
25 necessary prescribed burns would result in increased

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1 tree mortality among the remaining trees?

2 A. I have not run FOFEM or first order of fire
3 effects modeling on that. I have relied on my
4 experience, and I know you can burn understory burns and
5 lodgepole, things like that, and not have significant
6 tree mortality if you time it correctly with the right
7 prescription.

8 Q. Okay.

9 A. If you're in there without a good prescription
10 or in the heat, yes, you will kill trees.

11 Q. And your opinion about that is based on your
12 personal experience?

13 A. That and looking at the literature, yes, sir.

14 Q. What literature specifically says that broadcast
15 burning will not cause mortality in lodgepole pine --

16 A. I go back to Arno in -- I believe it was 1985,
17 and Lotan for sure in 1985, and they discuss the fact
18 that there are stands on the east side of the Rockies
19 and other places in the Northern Rockies of lodgepole
20 pine that show signs of having returned -- a short
21 return fire interval, and they are more like a ponderosa
22 pine stand with cat -- typically, you will not find a
23 lot of lodgepole trees with, let's call it, cat faces or
24 fire scars on them, but you will find them where there
25 are low-intensity fires.

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1 Q. Okay.

2 A. So, the potential's there.

3 Q. But it's fair to say that you didn't perform
4 that analysis formally.

5 A. No, sir, I did not.

6 Q. And you didn't discuss this issue in either of
7 your expert reports, in any of your three expert
8 reports.

9 A. No, sir.

10 Q. Would you agree that frequent and effective
11 maintenance is required to maintain the efficacy of any
12 fuel break?

13 A. Of course.

14 Q. Does that requirement apply to your fuel break,
15 too?

16 A. Yes.

17 Q. Have you determined what standards for
18 maintenance would be required to maintain the
19 effectiveness of your proposed fuel break?

20 A. By "standards," you mean as far as reducing X
21 number amount of fuel per year, per treatment?

22 Q. Certainly.

23 A. No, I have not.

24 Q. Have you determined in any way what standards
25 would be necessary to maintain the fuel break, using

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1 whatever definition you'd like?

2 A. No, sir. No, sir.

3 Q. And you haven't calculated what the cost of that
4 maintenance would be.

5 A. I gave a rough estimate in my report based on
6 what treatment had already been done for the 7000 acres
7 prior to the Red Eagle Fire.

8 Q. For maintenance?

9 A. Oh, no, sorry, for the initial -- for the
10 initial -- creating the initial fuel break -- shaded
11 fuel break, not for maintenance.

12 Q. Now, I'm glad you brought up that calculation
13 based on a table of prior treatments.

14 A. Um-hum.

15 Q. Have you determined in any way whether the
16 treatments in that table are similar to the one you're
17 proposing here?

18 A. No, sir. I looked strictly at cost per acre.

19 Q. So, it's possible that those treatments could be
20 very different from what you're proposing.

21 A. Some of the treatments I looked at, if I
22 remember correctly, were -- I think some of them were
23 small portion cuts, and I believe some were clearcuts.
24 So, I figured there was a pretty good average across the
25 board of different treatment types. So, it would be a

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1 rough average, but usable.

2 Q. Did you formally compute that in any way?

3 A. I did not.

4 Q. Have you considered whether your proposed fuel
5 break would be consistent with the National Park
6 Service's management directives for Glacier National
7 Park?

8 A. That wasn't my assignment, sir.

9 Q. Okay. And similarly, you haven't determined
10 whether your fuel break even could be implemented while
11 complying with the Park's policy of managing most of
12 Glacier National Park as wilderness.

13 A. Again, that wasn't my assignment. I was just
14 asked one question.

15 Q. Okay. And what was that question?

16 A. Would the -- would a fuel treatment possibly
17 affect a fire similar to the Red Eagle Fire and what the
18 impacts might be on the Blackfeet Tribal Forest.

19 Q. And so you also haven't looked at whether
20 implementing this fuel treatment would be consistent
21 with the management directives for the Blackfeet Tribal
22 Forest.

23 A. No, sir.

24 Q. Now, your opinion is that these forest managers
25 didn't act prudently because they didn't implement a

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1 fuel treatment like this one. Is that true?

2 A. They didn't implement any fuel treatment that I
3 could find, sir.

4 Q. Well, they certainly did implement fuel
5 treatments.

6 A. They implemented small sales -- in my opinion,
7 they implemented small sales, easily accessible tracts
8 that were a quick way to make money. That's -- I don't
9 see anything in there that would -- you couldn't -- I'm
10 sorry, but it would be tough to convince me that they
11 did anything more than make it easy on themselves for
12 generating some income for the Tribe.

13 Q. And is it your opinion that those forest
14 managers should have implemented something more similar
15 to your proposal?

16 A. Yes, sir.

17 Q. Okay. And part of that prudent management would
18 require them to determine whether the proposed fuel
19 treatment would be compatible with their management
20 directives, wouldn't it?

21 A. Of course.

22 Q. And you haven't analyzed that.

23 A. No, sir.

24 Q. So, specifically, are you aware that the BIA's
25 forest management plan in effect from 1997 until 2006,

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1 or later, reserved certain areas of the Blackfeet Tribal
2 Forest through forest management activities?

3 A. Again, that wasn't my assignment. I was just
4 asked to look at the effects of a fuel treatment on the
5 boundary.

6 Q. So, you haven't assessed whether this fuel
7 treatment in any way would affect stream buffer zones.

8 A. No, sir.

9 Q. Nor the effect to which it would affect
10 viewsheds?

11 A. Viewsheds? No, sir.

12 Q. Okay. You did say in your initial report that
13 this could be implemented while maintaining a certain
14 visual quality to the viewsheds, didn't you?

15 A. I think it could, yes.

16 Q. But you haven't analyzed formally whether it
17 would be consistent with the management directives
18 designed to protect those viewsheds within the Blackfeet
19 Tribal Forest.

20 A. I have not. I'm not a landscape architect.

21 Q. Have you assessed the ecological impacts of your
22 proposed fuel break in any way?

23 A. No, sir.

24 Q. Have you assessed the legality of your proposal
25 in any way?

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1 A. Legality as far as fiduciary requirements to
2 have a -- you know, protection of the Tribal Forest or
3 in what way?

4 Q. With any federal statute or controlling law
5 whatsoever.

6 A. No.

7 Q. Have you assessed in any way whether it would be
8 practicable to implement your proposed treatment?

9 A. I looked again at the average cost per acre,
10 what had already been treated in ten years prior to the
11 Red Eagle Fire, and in my opinion, they could have
12 planned those 7000 acres in a much more consistent
13 manner along the boundary if they had chosen to.

14 Q. But you haven't looked at any of these other
15 impediments we just discussed.

16 A. No, sir.

17 Q. Are you aware that most of the large fires on
18 the Reservation have historically started within the
19 Reservation's boundaries?

20 A. I can't tell you that I know it's most of them.
21 I know that there are a number of them that are, yes,
22 sir.

23 Q. Okay. So, you would agree that there are at
24 least a number of large fires that historically started
25 within the Reservation.

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1 A. Of course.

2 Q. And you discussed with Mr. Anderson earlier that
3 it's important for a forest manager to consider fire
4 history in designing fuel breaks.

5 A. Um-hum.

6 Q. Would your fuel treatment along the border
7 between the Park and the Reservation have any beneficial
8 effect against a fire starting within the Reservation?

9 A. It wasn't my assignment to look at that.

10 Q. Okay. So, you would agree that there are
11 limited resources for a land management agency, like the
12 BIA, to implement fuel treatments, wouldn't you?

13 A. Yes.

14 Q. And your assessment of feasibility here is based
15 entirely upon the conclusion that the total number of
16 fuel treatments in the years preceding the fire is
17 similar to the total acreage of what you're proposing
18 here, isn't it?

19 A. I need you to ask me that again, please.

20 Q. Tell me again what your basis was for concluding
21 that your fuel treatment would have been feasible based
22 on prior fuel treatments.

23 A. Oh, okay. I looked simply at the total number
24 of acres treated in about ten years, and they did more
25 acres than the proposed fuel break that I came up with

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1 would be. It seemed simple that -- you know, of course,
2 there's always a little bit of an outlier that you may
3 need to look at something different as far as
4 accessibility or something, but on rough average, they
5 treated more acres in ten years than we would need for
6 the fuel break.

7 Q. So, if the BIA had spent those ten years
8 implementing your fuel treatment instead of building
9 those other fuel breaks, your fuel treatment would have
10 had -- would not have had any effect on fires starting
11 within the Reservation, would it?

12 A. It wasn't aimed for that, sir.

13 Q. Okay. Did the fuel types in a given forest
14 influence what fuel treatments you would perform?

15 A. Fuel types?

16 Q. Let's be more clear.

17 Does the ecology of a given forest influence
18 what fuel treatments you would perform?

19 A. Yes, sir.

20 Q. How so?

21 A. Different tree species have different responses
22 to fire, and in this case, looking at the tribal records
23 and their forest plan, this is mixed conifer, dry
24 Douglas fir, lodgepole. Midelevation, it's defined in
25 their plan as mixed conifer, dry Doug fir, lodgepole,

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1 between 4400 and about -- I think it was 6000 or 6200
2 feet. I can't remember the exact upper number. And
3 those are proven to be quite effective with shaded fuel
4 breaks. I mean, Dr. Finney has an article that
5 discusses fuel breaks and shaded -- shaded fuel breaks
6 and mixed conifers being effective.

7 Q. Were you here for Mr. Soleim's testimony
8 yesterday?

9 A. Almost all of it, yes, sir.

10 Q. Did you hear him testify that the forests on the
11 east side of Glacier National Park are subalpine?

12 A. I was only focused on the boundary, and I think
13 around Red Eagle Lake, yes, they would be subalpine,
14 because they're a higher elevation. And if you're
15 looking at habitat type, which we can argue all day long
16 if you like, habitat type is the potential climax
17 species that can exist on the site, and if one subalpine
18 fir shows up in an area, then it's a habitat type
19 basically, a habitat type of subalpine fir. It may be
20 one in 50 acres, but it's still a class of subalpine. I
21 was looking at cover type, lodgepole type, mixed
22 conifer, dry Doug fir, and that's what -- the area was
23 focusing on.

24 Q. And were you here for Mr. Running Wolf's
25 testimony this morning?

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1 A. Most of it, yes, sir.

2 Q. Did you hear him testify that the Blackfeet
3 Tribal Forests are subalpine lodgepole forests.

4 A. I think he referred to habitat type, yes, sir.

5 Q. Okay. Is it fair to say that your opinion is
6 based on your conclusion that the areas burned by the
7 Red Eagle Fire are predominantly mixed conifer forests?

8 A. Yes, sir.

9 Q. When you designed your proposed fuel break, did
10 you consider the behavior of the Red Eagle Fire?

11 A. Like I said, I modeled a similar fire. I wanted
12 to see what a higher intensity fire could do against a
13 fuel break like that.

14 Q. And specifically in designing this fuel break,
15 did you consider the distance with which spotting fires
16 spread from the main fire?

17 A. Only if reported up to a mile, and when it
18 burned through the first half-mile buffer, and then it
19 went back and it burned through the second half-mile
20 buffer, I figured a mile was a pretty good number, if
21 that was going to spot and do that, so...

22 Q. And so it's fair to say that you tailored the
23 width of your fuel break based upon the distance with
24 which spotting was observed.

25 A. That's true.

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1 Q. Okay. And so generally speaking, would you
2 agree that you relied on evidence about the Red Eagle
3 Fire's behavior and the conditions under which it
4 occurred when you designed this fuel break?

5 A. I also looked at -- McCandless has some articles
6 in the Sierra Nevada, which, again, is not lodgepole but
7 is mixed conifer and red fir. I looked at the Wallow
8 Fire, as I've already reported, and that was a
9 half-mile-wide buffer. So, there are other examples of
10 large areas out there. And Agee and Finney also say
11 that there is no upper limit to a shaded fuel break, but
12 bigger is better.

13 Q. So, let's go back to the question I asked. Is
14 it fair to say that you considered the behavior of the
15 Red Eagle Fire and the conditions within which it
16 occurred when you designed your one-mile-wide fuel
17 break?

18 A. Oh, yes, sir. Sorry.

19 Q. And you also knew when the fire occurred.

20 A. Well, we still haven't proven it started on the
21 28th or 26th, but I went with the 26th.

22 Q. Well, let's say you knew that it would start in
23 July of 2006.

24 A. Um-hum.

25 Q. And you knew the -- you agree with that?

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1 A. Oh, yeah.

2 Q. And you knew the exact spot where the fire
3 crossed the boundary between Glacier National Park and
4 the Blackfeet Reservation.

5 A. Yes. I have the progression maps to look at.

6 Q. Okay. Is it fair to say that all that knowledge
7 about the fire's specific behavior, the conditions
8 within which it occurred, the time it occurred, the
9 place where it crossed the boundary, wouldn't have been
10 available to the BIA in the years before the fire?

11 A. Yeah. The only thing that would have been
12 available to them is the probability they would have a
13 large fire, as spoken to by Bushey in a couple different
14 places, so...

15 Q. But they couldn't have anticipated the specific
16 behavior and conditions you considered in designing your
17 fuel break.

18 A. I disagree. I think that the historical
19 discussions in the Glacier National Park fire management
20 plans and the BIA's own fire management plans talk about
21 large catastrophic fires coming from the west to the
22 east. And to me, a large catastrophic fire is a crown
23 fire, and typically they can spot up to a mile. I think
24 they had the information available to them for a severe
25 fire.

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1 Q. Would they have been able to anticipate the
2 exact place where the fire would cross the boundary?

3 A. Nobody can.

4 Q. Okay.

5 A. You don't know where they're going to start.
6 You just know they will start.

7 Q. So, let's talk about the size of your
8 boundary -- your fuel treatment. Is it fair to describe
9 it as one mile wide by five miles long?

10 A. Yes.

11 Q. You also at various times have proposed fuel
12 treatments across areas of Fuel Model 10 on the whole
13 boundary, haven't you?

14 A. Yeah. Scattered spots, yes, sir.

15 Q. So, I'd like to be clear about what your opinion
16 is. Are you saying that the forest managers here were
17 imprudent by not building the specific one-by-five
18 treatment or by not treating the entire boundary?

19 A. Primarily the one-by-five to start with, but
20 then there are other inclusions of Model 10 along the
21 entire 70-mile border that they should look at.

22 Q. And could a severe fire have crossed in those
23 other inclusions?

24 A. Of course, if it started up there.

25 Q. Okay. So, your one-by-five fuel break wouldn't

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1 be effective against a fire starting somewhere else
2 along the boundary.

3 A. When I called for treating 5830-some acres, that
4 was assuming, like I said, a buffer in those areas.

5 Q. Okay. And so is it your opinion that a prudent
6 forest manager would have treated all 5000-and-some
7 acres along the entire boundary?

8 A. Yes, sir.

9 Q. Let's talk a little about some of the specifics
10 to your proposed fuel treatment. Aside from this whole
11 thinning issue that we discussed, is it also accurate
12 that you have described your fuel break as converting
13 areas of Fuel Model 10 to Fuel Model 8?

14 A. Yes.

15 Q. And is it accurate to say that Fuel Model 8 is a
16 closed timber litter fuel type?

17 A. Yes.

18 Q. As a practical matter, could areas without
19 timber cover, like a meadow or a shrubland, ever be
20 converted to Fuel Model 8, as that term is used in
21 Anderson's paper?

22 A. I tried to say in my reports, I was trying to
23 mimic the fire behavior in a Fuel Model 8 in all fuels,
24 you'll find that, and in my mind, you can treat grasses,
25 you can treat shrubs, you can treat any fuel out there

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1 to reduce the intensity. It doesn't have to necessarily
2 be a closed timber model, but I wanted something that
3 was similar to a Fuel Model 8 in its responses to fire.

4 Q. Would the end result of those treatments in
5 grasslands, meadows, shrubs be a Fuel Model 8?

6 A. Not classically, no, sir, but it would be
7 similar to.

8 Q. When you say -- by "not classically," you mean
9 they wouldn't meet Anderson's own definition of a Fuel
10 Model 8?

11 A. It would not be closed timber litter, no, sir.

12 Q. So, not classically, literally they wouldn't be
13 a Fuel Model 8. Do you agree?

14 A. That would -- yes.

15 Q. Much of your opinion here today involves fire
16 suppression. So, let's deal with some basic factors
17 there. Are you familiar with fire suppression
18 techniques?

19 A. Very.

20 Q. Have you qualified to lead an incident
21 management team?

22 A. No, sir.

23 Q. Have you ever been qualified to lead an incident
24 management team?

25 A. I was an IC type 4 and a 3. Three times in my

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1 career with the Beaverhead-Deerlodge, I did not choose
2 to go on to the incident commander type 2 or 1.

3 Q. And just to be clear, type 2 is more complex and
4 higher qualified than type 3.

5 A. Yes, sir.

6 Q. And type 1 is more complex, more qualified
7 still.

8 A. People argue that they're about the same, but
9 yes.

10 Q. Okay. Are you familiar with how to suppress a
11 crown fire?

12 A. Yes.

13 Q. How would you do that?

14 A. Typically, you wait. There is not much you can
15 do. You wait for a fuel composition change. Like
16 Stanich, in his final fire package report, the fire
17 dropped to the ground when it got to some of the Fox
18 Creek Fire and to fuel composition changes. So, you
19 wait for a fuel composition change or a weather change
20 or both.

21 Q. And in this case -- in the actual Red Eagle
22 Fire, not the fire you've modeled -- the fire did, in
23 fact, slow upon a fuel composition change and upon
24 moderating weather conditions.

25 A. Yes.

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1 Q. Is firefighter safety the highest priority in
2 wildland firefighting operations?

3 A. For me it is.

4 Q. And do you know whether there are policies
5 nationally that agree with that?

6 A. I'm sorry, that I agree with or that agree with
7 firefighter safety as priority one?

8 Q. The latter.

9 A. Yes.

10 Q. And is crew fatigue an important factor in
11 firefighter safety?

12 A. Of course.

13 Q. And are there required rest intervals in place
14 to help ensure crew safety?

15 A. Yes, sir.

16 MR. BAIR: Your Honor, I'm about to jump into
17 discussing Mr. Schulte's modeling. This may be a good
18 time for a short break if the Court would like one.

19 THE COURT: All right, let's take a break. We
20 will resume at 3:15.

21 MR. BAIR: Thank you, Your Honor.

22 (Court in recess.)

23 THE COURT: Thank you. Please be seated.

24 You may go ahead, Mr. Bair.

25 MR. BAIR: Thank you, Your Honor.

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1 BY MR. BAIR:

2 Q. Mr. Schulte, we were just discussing -- well,
3 first, let me ask one clarification.

4 Your modeling in FARSITE only models your
5 five-mile-long prescription, not your proposal for the
6 whole boundary.

7 A. Right, just the prescription.

8 Q. Thank you.

9 So, before we broke we were talking about fire
10 suppression --

11 A. Um-hum.

12 Q. -- and firefighter safety. Let's move on to the
13 way that you used FARSITE to model suppression. When
14 you initially modeled your proposed fuel break using
15 FARSITE, did you model suppression?

16 A. No.

17 Q. So, in the modeling discussed in your initial
18 report, suppression wasn't reflected.

19 A. It was not.

20 Q. And why did you not model suppression?

21 A. Because as I said in my first deposition, since
22 I had not enabled spotting and the fire entered the
23 west -- the westernmost treatment area that I had for
24 Glacier National Park, it slowed down, virtually
25 stopped, and by the time it ran the ten days, it was --

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1 it hadn't penetrated all the way through. I had made
2 the mistake of not enabling spotting.

3 Q. And you've been very honest about that mistake.
4 Is that the only reason that you didn't model
5 spotting -- I'm sorry, model suppression?

6 A. I would say yes.

7 Q. Is it also possible that you didn't model
8 suppression because you would have had to make
9 assumptions about which suppression crews did what?

10 A. Of course.

11 Q. Okay.

12 A. Sure.

13 Q. And is there an element of uncertainty in that
14 modeling?

15 A. What I used strictly were the Fireline
16 Handbook's line progression rates, and I think I gave
17 them as an exhibit in my second -- my supplemental
18 report, and those are typically kind of an average line
19 production rate by suppression type.

20 Q. So, when I asked you at that first deposition
21 why you hadn't modeled suppression, if you would like to
22 turn to page 85 of Defendant's Exhibit 148, that's your
23 first deposition transcript.

24 A. Eighty-five?

25 Q. Yes, page 85 of Defendant's Exhibit 148.

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1 A. Okay.

2 Q. You stated, beginning on line 9, that in order
3 to model suppression, you would have to assume what was
4 done on a given day. How have you resolved those
5 assumptions now that you are modeling suppression?

6 A. I went back and looked at the initial action
7 plans, the IAPs for the fire, from Stanich and Heinz's
8 teams both, looked at the division of science, what they
9 had available, and applied them to the model.

10 Q. And are you still making any assumptions in your
11 modeling of suppression?

12 A. You assume a given production rate and the model
13 makes assumptions on the slope, et cetera, yes, sir.

14 Q. And do you have any way of knowing whether those
15 assumptions -- for instance, the production rate -- are
16 accurate?

17 A. I could only rely on what the published rates
18 are. Without being there, seeing what actually is the
19 production rate in a given fuel model, you just have a
20 range of averages to use.

21 Q. And those could vary.

22 A. Of course.

23 Q. How does FARSITE model suppression?

24 A. As I understand it, it's a gaming output
25 basically. You are modeling the production rates around

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1 the edge of the fire against the forward progression of
2 the fire. If FARSITE can link up together before the
3 fire gets to a given point, you've caught it.

4 Q. Okay.

5 A. If it can't, you won't.

6 Q. And when you say "caught it," you mean you have
7 laid lines that are impermeable.

8 A. Yes, sir.

9 Q. Does FARSITE model suppression crew safety in
10 any way?

11 A. Does FARSITE view safety in any way?

12 Q. Does it model suppression crew safety in any
13 way?

14 A. You can go indirect or direct, meaning you can
15 define how indirect lines, a line that is not adjacent
16 to the flaming front or the black, so indirect can give
17 you a spacing, which is typically what we would do for a
18 flame length over four feet, for instance. You would go
19 indirect instead of direct. It's too hot to get there.

20 That allows you that liberty to define how far
21 you want to step back from the fire. Then you can
22 assume whether or not you can burn out or bring the
23 black with you, so you have a safe zone to step into
24 with that modeling.

25 And I guess the simplistic assumption, sir,

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1 would be that if you can't catch the fire, that it's not
2 safe to be there with the resources that you deploy.

3 Q. Is FARSITE designed to model suppression crew
4 safety?

5 A. I would not say it's intrinsically designed for
6 that, no, sir.

7 Q. Okay. Does FARSITE produce any output about
8 whether any given suppression action has endangered
9 suppression crews?

10 A. No, sir.

11 Q. Does FARSITE model crew fatigue in any way?

12 A. No, sir.

13 Q. Does FARSITE model required rest intervals for
14 crews in any way?

15 A. No, sir.

16 Q. And as we discussed earlier, suppression crew
17 safety is the foremost consideration in fire
18 suppression.

19 A. Of course.

20 Q. And suppression crew fatigue is important to
21 determining whether any given suppression action is
22 safe.

23 A. Yes.

24 Q. And those rest intervals are in place to ensure
25 that suppression crews are not overly fatigued.

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1 A. Yes.

2 Q. So, in fact, FARSITE's suppression modeling does
3 whatever the professional creating the model tells it to
4 do, doesn't it?

5 A. It has no application to what the conditions of
6 the crews are that you input. It's simply a game in the
7 model to see if you can catch the fire with the
8 resources you apply.

9 Q. So, as the modeler, as that game player, you
10 just tell FARSITE where to create these lines, at a set
11 rate along a set path.

12 A. I -- yes. Basically, yes.

13 Q. Okay. And, in effect, in doing that, as that
14 game player, you're acting as a surrogate for the real
15 incident commander in reality.

16 A. Yes.

17 Q. And you modeled these suppression efforts
18 reflected in your supplemental report nearly ten years
19 after the actual fire, didn't you?

20 A. Um-hum.

21 Q. And at that time, you knew things about how the
22 fire behaved that the actual incident commanders, Heinz
23 and Stanich, couldn't have known.

24 A. As far as the outcomes or as far as the flame
25 lengths? What are you asking, sir?

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1 Q. Any of that.

2 A. Well, they were there. They could see what was
3 going on in the fire. They had daily reports from their
4 folks in the field about what was actually occurring in
5 the fire. I could only read the reports.

6 Q. They had reports at any given time, but they
7 couldn't know how winds would change in the future,
8 could they?

9 A. Oh, agreed. No, agreed.

10 Q. And they couldn't have known what fuel moistures
11 were with the degree of precision that you know ten
12 years in the future.

13 A. True.

14 Q. And they also couldn't have predicted the fire's
15 progression rate without knowing the things that you
16 know now with the same degree of fidelity.

17 A. In the fuel model changes, yes.

18 Q. And so when you instructed FARSITE to model the
19 suppression efforts, you had some knowledge that the
20 actual incident commanders lacked.

21 A. I relied on what the model outputs were telling
22 me, and I looked at what the flame lengths were dropping
23 to and realized that in an area that's a mile wide, the
24 flame lengths that are a foot to four-foot long, you
25 have got a very good chance of suppressing something

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1 safely with people.

2 Q. But you're not a qualified type 2 incident
3 commander.

4 A. No, sir.

5 Q. And --

6 A. I'm a fire behavior analysis.

7 Q. And you're also not a qualified type 1 incident
8 commander.

9 A. I am not, sir.

10 Q. Did you identify any safety zones in
11 implementing this simulation of suppression?

12 A. It's not part of the FARSITE program.

13 Q. Okay. Did you, as part of your analysis outside
14 FARSITE, identify safety zones?

15 A. I looked strictly at the option of a shaded fuel
16 break, which in my opinion is a good safe zone, a mile
17 wide, five miles along, or 3200 acres. That's a very
18 large area to get away from a fire in.

19 Q. Would -- based upon your limited expertise in
20 suppression, wouldn't an incident commander typically
21 identify express safety zones during a suppression
22 action?

23 A. My limited experience in suppression? I have 40
24 years in suppression, sir. And, yes, an incident
25 commander will put in safe zones if they're required.

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1 Standard procedure.

2 Q. In part, did you instruct those suppression
3 forces to construct a fireline within Glacier National
4 Park?

5 A. I put the -- yes. Short answer, yes.

6 Q. And did those forces within Glacier include
7 bulldozers?

8 A. Yes.

9 Q. Are you aware of -- really quickly, you agreed
10 earlier with Mr. Anderson that the suppression efforts
11 were adequate, that you didn't have any fault with those
12 suppression efforts in reality. Is that true?

13 A. Oh, as far as the original suppression efforts
14 in Red Eagle?

15 Q. Yes. Do you have any criticism of the
16 delegation of authority from the land management
17 agencies to the incident commanders?

18 A. No.

19 Q. Okay. And you did model dozer activities inside
20 Glacier National Park.

21 A. Yes.

22 Q. Are you aware of whether the delegation of
23 authority to the type 1 incident commander allowed dozer
24 use inside Glacier National Park?

25 A. I'm not aware because it wasn't part of what I

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1 was worried about. I was looking at the treatment
2 options, if all things were equal and they could do a
3 field treatment in the area, either in Glacier Park or
4 in the Blackfeet Agency, and with the resources
5 available that were listed in the incident action plans.
6 I did not look at the delegation of authority because
7 that wasn't applicable, as far as I was concerned, in
8 the model I was using.

9 Q. So, you don't think it's applicable, but you did
10 think what suppression forces were available was
11 applicable. Is that true?

12 A. Yes, sir, because why would I model the forces
13 that weren't there?

14 Q. Let's talk about a delegation of authority.

15 A. Okay.

16 Q. If you would turn to Plaintiff's Exhibit 57,
17 that's in the very back of the binder, and then turn
18 pretty deep into that document. Along the lower right,
19 there are a series of what are called Bates numbers.

20 A. Um-hum.

21 Q. The Bates number I would like you to look for
22 ends 8623.

23 A. 8623. Yes, sir.

24 Q. And actually, I'm sorry, if you would turn to
25 8624. 8623 is the beginning of the document.

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1 A. Okay.

2 Q. The second paragraph, beginning, "All of Glacier
3 National Park" --

4 A. Um-hum.

5 Q. -- and if you look down to the fourth line, it
6 states, "Any off-road use of mechanized equipment must
7 be approved in advance in writing by the Superintendent
8 [of Glacier National Park] through the Agency
9 Representative, on a case-by-case basis."

10 And so you did not consider this restriction in
11 any way in modeling your suppression efforts in FARSITE.

12 A. The problem that I was assigned was to look at
13 the effect of a fuel break on a fire, similar to the Red
14 Eagle Fire, coming to the Blackfeet Forest. I did not
15 look at delegations of authority because in my mind I
16 was modeling an intense fire. If I had the luxury of
17 having these resources, I figured that if the fuel break
18 was there, there has already been mechanized equipment
19 there. So, I could assume that it was useful.

20 Q. Okay. So, your assumption was that mechanized
21 equipment would be allowed inside Glacier National Park.

22 A. Yes, sir.

23 Q. Thank you.

24 Do you know whether FARSITE's suppression
25 function has ever been tested for its accuracy?

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1 A. Actually, I do not.

2 Q. Do you know whether FARSITE's suppression
3 function has ever been peer-reviewed?

4 A. Peer-reviewed by other than Dr. Finney, with
5 other research scientists?

6 Q. Yes, sir.

7 A. I think I vaguely remember reading something
8 about that in the past, but I couldn't give you a quote.

9 Q. And you've described this as a gaming tool.

10 A. Yes, sir.

11 Q. Can you tell me what the error rate is for
12 FARSITE's suppression functionality?

13 A. I cannot.

14 Q. Do you know whether FARSITE's suppression
15 function has ever been widely accepted by the community
16 of fire behavior experts?

17 A. I do not.

18 Q. Let's move on from the suppression function to
19 talk about how FARSITE works more generally. Is it
20 accurate to describe parts of FARSITE's modeling system
21 as deterministic?

22 A. Yes.

23 Q. Is it also accurate to describe elements of
24 FARSITE as stochastic?

25 A. Random? Yes.

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1 Q. Okay. So, you agree that in certain elements,
2 FARSITE's modeling is random.

3 A. Um-hum.

4 Q. Does that mean that producing a given simulation
5 multiple times, even with the same inputs, can result in
6 different outputs?

7 A. I don't think they'd be significantly different,
8 but there may be some differences in spreads, things
9 like that.

10 Q. Okay. So, you don't think it would be
11 significant. Can you quantify that degree of
12 randomness?

13 A. Not without looking at the documents, no, sir.

14 Q. How many times did you rerun any of your models
15 with the same inputs to measure that amount of
16 randomness?

17 Let me be clear --

18 A. That's okay, but --

19 Q. Did you only run your modeling once with any
20 given input to get output?

21 A. No, sir.

22 Q. So, you ran it multiple times?

23 A. Yes.

24 Q. Did you disclose all the output from doing it?

25 A. I just disclosed the final outputs. I did not

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1 disclose all the outputs.

2 Q. So, when you say "final output," what do you
3 mean?

4 A. Oh, the one that the -- for instance, the -- the
5 field model number -- Figure number 9 in my first
6 report, I ran that twice, if I remember correctly,
7 virtually the same results, assumed that it was good,
8 and quantified that as the final run.

9 Q. Okay. So, you're relying I believe in large
10 part on the modeling in your supplemental report. Is
11 that true?

12 A. Yes.

13 Q. How many times did you rerun those models with
14 the same inputs?

15 A. Let's see. I believe I ran it three times each.

16 Q. Okay. Did you disclose all of the output from
17 those multiple modeling runs?

18 A. They were virtually the same.

19 Q. Okay. Can you quantify how much they differed
20 from each other?

21 A. Not without looking at them again, no, sir.

22 Q. Okay. Now, earlier you discussed the spotting
23 setting with Mr. Anderson. Is that one element of
24 FARSITE that is stochastic, random?

25 A. I believe so, yeah.

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1 Q. Okay. And you chose a 5 percent setting for
2 spotting.

3 A. Um-hum.

4 Q. And you said that there is no factual basis for
5 that 5 percent as according with the reality of the Red
6 Eagle Fire. Is that true?

7 A. Not that I could find, no, sir.

8 Q. Okay. We can move on from that.

9 Let's talk about how you implemented your
10 proposed fuel treatment within FARSITE. Is it accurate
11 to say that in doing so, you took a polygon -- and I'm
12 quoting from your deposition here -- drew it across the
13 landscape in what you thought would be a good area to
14 put a Fuel Model 8 shaded fuel break, irrespective of
15 what was underneath there?

16 A. Yes.

17 Q. And when we say irrespective of what was
18 underneath there, does that mean that your fuel break
19 encompasses streams?

20 A. Yes.

21 Q. Does it also encompass rocks without any
22 vegetation on them?

23 A. The Divide Mountain, if I remember right, yes,
24 sir.

25 Q. Does it also encompass unforested areas, like

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1 meadows or shrublands?

2 A. The polygons didn't show up that finely. I
3 think I didn't zoom in, but they're probably there.

4 Q. Okay.

5 A. Small ones.

6 Q. Can you say with certainty that your polygon
7 included areas that were not Fuel Model 10 inside the
8 LANDFIRE database?

9 A. Along the stream courses, yes.

10 Q. Okay.

11 A. I'd have to look close at the rest of them.

12 Q. Okay. Have you testified in the past that
13 approximately 20 percent of that polygon is, in fact,
14 not Fuel Model 10 in its natural condition in the 2001
15 data?

16 A. The 20 percent is not which?

17 Q. Was not Fuel Model 10, before you implemented
18 the fuel treatment.

19 A. In Stanich's final fire package, the wildland
20 fire situation analysis all lead to saying it's about 80
21 percent Fuel Model 10 in the area.

22 Q. As we discussed earlier, unforested areas can't
23 be converted to an actual definitional Fuel Model 8 in
24 reality, can they?

25 A. That's true.

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1 Q. And similarly, streambeds couldn't be converted
2 to a Fuel Model 8.

3 A. It depends upon the vegetation involved in the
4 stream, and if you're looking at a shrub, willows along
5 the streambed, versus maybe some scattered conifer
6 through there, it may very well be an 8, but most
7 likely, if it's shrub, no.

8 Q. But the actual flowing stream can't be converted
9 to a Fuel Model 8.

10 A. Water? No, not really.

11 Q. Nor could unforested rocks?

12 A. Nope.

13 Q. Nor without going in and planting new trees
14 could unforested meadows or shrublands be converted to
15 Fuel Model 8.

16 A. Again, I tried to mimic the fire behavior in a
17 Fuel Model 8 across all the fuels. So, I used the Fuel
18 Model 8 as a surrogate.

19 Q. So, you would agree that your polygon is a
20 single, unbroken mass of Fuel Model 8 once you made that
21 conversion.

22 A. I said that in my reports, yes, sir.

23 Q. Okay. But as we discussed, in reality, you
24 couldn't actually create a Fuel Model 8 in those areas
25 that weren't timbered before.

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1 A. I believe -- and, again, not trying to be
2 flippant -- but that's why they call it modeling.

3 Q. Right. And was your decision to do that based
4 on what you've described as a two fuel model concept?

5 A. I'm sorry?

6 Q. I think you've used the term "two fuel model"?

7 A. I did that with the polygons, if I remember
8 correctly, in my first report, meaning you would have
9 inclusions of Fuel Model 8 surrounded by Fuel Model 10,
10 and they show those ineffective.

11 Q. Okay. You described that concept as being
12 relevant during your second deposition, though, when we
13 were talking about your one-mile-wide by five-mile-long
14 fuel break, so --

15 A. Oh.

16 Q. -- so is that concept relevant to what you did
17 in that --

18 A. I misunderstood your question, sorry. Yes, I
19 said in one of my reports that in a two fuel model
20 concept, you have to still go with the primary carrier
21 of the fire, and you may have 80 percent as a Fuel Model
22 10, 20 percent as something else, and that's a two fuel
23 model, and one will burn differently than the other.

24 Q. So, in this case, the conversion of Fuel Model
25 10 to Fuel Model 8 would be your primary fuel model

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1 under that concept.

2 A. Yes, sir.

3 Q. Who taught you to use FARSITE?

4 A. Dr. Finney.

5 Q. Did Dr. Finney teach you to create a single
6 homogenous polygon to represent a fuel treatment
7 irrespective of what was underneath it?

8 A. There are two ways you can use a landscape
9 editor tool. You can go in and pick each and every
10 30-meter pixel and change those or you can go in and do
11 a blanket area like I did. So, there's two options.

12 Q. And so you're saying that to do that more
13 finegrained conversion, to change those unforested areas
14 to something that they would actually become after fuel
15 treatment, you would have to select them one by one.

16 A. Yes, sir.

17 Q. You based your analysis of what fuels were
18 present here largely based on the LANDFIRE database. Is
19 that true?

20 A. Yes.

21 Q. What is LANDFIRE?

22 A. LANDFIRE is a government-sponsored -- I'm trying
23 to think of the proper word here -- is a repository, as
24 I told Mr. Anderson, a repository of fuel models;
25 vegetation, you can get slope and aspect, you can get

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1 FARSITE landscape files if you choose to go that way,
2 and there are a variety -- wide variety of available
3 landscape features that you can download that are
4 seamless.

5 So, there would be no line -- as in the old
6 days, again, going back to 1994 on the Starvation Creek
7 Fire, you couldn't go into Canada, when we did the
8 burnout for the Starvation Creek Fire, because the fuel
9 model stopped, and you could only rely on what was given
10 to you verbally. There was no geographical information
11 out there that you could input.

12 So, each individual part, like Glacier, had
13 their own CDs of fuel models, and that was cumbersome.
14 I used to have literally a bandolier of those to back
15 around with me. FARSITE -- I'm sorry, LANDFIRE took
16 care of that.

17 Now you can go in and download one seamless
18 package, almost anywhere in the nation, and, you know,
19 there's error in that, obviously, it's just satellite
20 interpretation, but it's better than a huge number of
21 CDs.

22 Q. And to make sure I understand your contention,
23 is it your opinion that the forest managers for the
24 Blackfeet Tribal Forests and Glacier National Park
25 should have relied on LANDFIRE to determine that there

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1 was an overloading of fuels along the boundary between
2 the Park and the Reservation, prior to the Red Eagle
3 Fire?

4 A. Well, that's one way of looking at it, yes, you
5 could do that, or they could do inventories as well.

6 Q. Okay. But you believe the LANDFIRE should have
7 tipped them off to that.

8 A. At a minimum, and the local folks in the BIA and
9 the Glacier National Park folks all recognized it was
10 Model 10.

11 Q. Okay. Let's talk about exactly what you were
12 trying to model using FARSITE. You've testified today
13 that you were not trying to model exactly the Red Eagle
14 Fire. Is that true?

15 A. That's true.

16 Q. Okay. And is that true for the modeling
17 represented in your supplemental report?

18 A. That's true.

19 Q. Is it also true for the modeling represented in
20 your initial expert report?

21 A. Yes.

22 Q. And did you use the same modeling for your
23 initial expert report that you used in your 2015
24 affidavit?

25 A. 2015 affidavit?

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1 Q. Yes, sir, the affidavit you submitted in support
2 of the Plaintiff's motion for summary judgment.

3 A. I believe so, yes.

4 Q. Okay. Do you have any reason to think that you
5 redid that modeling between 2015 and January of 2016?

6 A. I don't remember any reason to right now.

7 Q. Okay. Let's look at that affidavit, which is in
8 this book. It's marked as the affidavit of Darrell
9 Schulte. It is Plaintiff's Exhibit 80. I would ask you
10 to please turn to paragraph 24.

11 A. In paragraph 24?

12 Q. Paragraph 24, which is on page 10 of 16 along
13 the top.

14 A. Okay, all right. Yes, sir.

15 Q. In paragraph 24, you state, "I used the FARSITE
16 system to model the Red Eagle Fire as it actually
17 occurred with the same weather and fuel conditions."

18 Doesn't that seem at odds with your testimony
19 today that you were only modeling a fire similar to the
20 Red Eagle Fire?

21 A. I don't believe you can actually model any fire
22 exactly the way it occurred. It's still just a model.

23 Q. In this affidavit, though, you said you used the
24 FARSITE system to model the Red Eagle Fire as it
25 actually occurred. Is that not true?

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1 A. I used the actual firelines, I used the actual
2 output files that showed me the perimeter, so the Red
3 Eagle Fire -- it was representative of what actually
4 occurred, yes. That part is geographical, and I tried
5 to get as close as I could.

6 Q. But you've been careful since then to be clear
7 that you weren't modeling the actual Red Eagle Fire.

8 A. Yes.

9 Q. Doesn't it seem to you that there's a tension
10 between saying that you've modeled the Red Eagle Fire as
11 it actually occurred and saying that you were only
12 modeling a similar fire?

13 A. There's a what, sir?

14 Q. There's a tension between those two things.

15 A. A tension?

16 Q. They don't seem to be saying the same thing.

17 A. Thinking of the modeling concepts and things --
18 well, from what I have written here and what I deposed
19 later, I'm sure you will say that I have tried to do
20 exactly as the Red Eagle occurred. I don't think I did.
21 I don't feel like I did, but I said that in this
22 statement.

23 Q. And this statement was under oath.

24 A. Yes, sir.

25 Q. We can move on from that.

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1 Is it true that you did not calibrate your
2 FARSITE simulation settings to match the behavior of the
3 actual Red Eagle Fire?

4 A. I did not.

5 Q. And would you agree that your modeled fire could
6 differ significantly from the actual Red Eagle Fire?

7 A. You'd have to define "significantly" for me,
8 because in a crown fire -- I'm sorry, I -- I don't see
9 much difference in crown fires. They are huge, they're
10 hot, and they're intense, and that's what I ran at the
11 fuels.

12 Q. Well, let's talk about a few specific
13 differences. Does your model fire differ in its spread
14 rate from the actual Red Eagle Fire?

15 A. You're asking me if it gets to the boundaries at
16 about the same time?

17 Q. No. I'm asking you whether it spreads more
18 quickly or more slowly.

19 A. I felt it was very close to the Red Eagle Fire
20 as far as spread rates go. I can't give you the exact
21 rates of spread. We have a progression map for the Red
22 Eagle Fire. I don't think there's anything recorded as
23 far as what was the actual spread rates.

24 Q. So, although you think it's close, would you
25 agree that your modeled fire differs in how quickly it

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1 spread versus the actual observed Red Eagle Fire?

2 A. I would say not significantly, but there's a
3 difference.

4 Q. And can you quantify how much that difference
5 is?

6 A. Not without pulling out the layers and looking
7 again.

8 Q. And you haven't done that as part of any of your
9 expert reports.

10 A. Well, I have looked at -- I believe I told
11 Mr. Anderson earlier that the model fire reached the
12 edge of the buffer on July 29th, about 1800, in my final
13 run and supplemental, and I do believe that the reports
14 on the Red Eagle Fire state that it crossed the border
15 between Glacier Park and the Blackfeet Nation sometime
16 on the evening of the 29th or the morning of the 30th.
17 So, I'm within hours of when that actually crossed. So,
18 that would tell me the spread rates are quite similar.

19 Q. So, your understanding is that the fire crossed
20 the boundary between the Park and the Reservation the
21 evening of the 29th or after midnight on the 30th.

22 A. That's what the reports say.

23 Q. Which reports?

24 A. Stanich's report, in the initial WFSA, if I
25 remember correctly. I would have to look those up

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1 again, but it's stated in a couple places across
2 sometime the 29th or 30th. Mr. Montgomery brings that
3 out. His resources, I think, were the same as mine.

4 Q. And you've also testified that you started the
5 fire closer to the boundary than where it was first
6 observed by National Park Service officials. Is that
7 true?

8 A. Where they thought it was observed, yes, sir.

9 Q. What do you mean, "thought it was observed"?

10 A. There is no actual point of origin. They can't
11 tell me where it started.

12 Q. Okay. And so it's your testimony that it's
13 impossible to quantify where the fire was observed on
14 July 28th?

15 A. They might have an initial idea where the column
16 was, but by the time they might have been able to get in
17 there to look at where the -- in my opinion -- where the
18 fire had burned from in that major run day, the spread
19 toward Blackfeet Nation and laterally out and around, it
20 would take a while to determine where that was.

21 Q. So, the fire was observed on the 28th on the
22 west side of Red Eagle Lake, wasn't it?

23 A. Yes.

24 Q. And you chose to ignite your fire on the east
25 side of Red Eagle Lake, approximately a mile and a half

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1 from that observation point.

2 A. And, again, I was trying to do something similar
3 to the Red Eagle Fire.

4 Q. Okay. Let's discuss those similarities and
5 differences. You ignited your fire on the 26th of July,
6 didn't you?

7 A. I did.

8 Q. And prevailing winds carried this fire from the
9 west to the east, correct?

10 A. Yes.

11 Q. And so the actual fire observed to the west side
12 of the Park on the 28th, is there any evidence that the
13 fire on the 26th was on the east side of the Park -- of
14 the lake?

15 A. They did not know where the point of origin was
16 on the 26th. They could not find the fire.

17 Q. Okay. Is there any way that the fire could have
18 spread from point of origin on the east side of Red
19 Eagle Lake to then be observed on the west side of the
20 lake two days after you modeled its start?

21 A. So, you're asking me why, again, I put it west
22 of the lake, in a nutshell?

23 Q. No, why you put it east of the lake.

24 A. I'm sorry, put it east of the lake, thank you.
25 I put it east of the lake. I chose it.

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1 Q. Okay. And there are no confirmed reports that
2 the fire began on the east side of the lake.

3 A. No, sir.

4 Q. Would you agree that igniting the fire,
5 arguably, if it were on the wrong place, could affect
6 the outcome of your modeling?

7 A. I don't think it affected it very much. I mean,
8 it still reached the perimeters we're talking about, the
9 boundaries, about the same time.

10 Q. But it could create a difference.

11 A. Slight.

12 Q. Okay. Can you quantify that difference?

13 A. Not, again, without looking at the outputs, but
14 the -- the initial growth from the 26th to 28th is not
15 recorded. There's a polygon on the progression map
16 that's, I believe, an estimate. So, we don't really
17 know how big it was on the 28th when it started to burn.
18 So, we have no real good way of coming up with a polygon
19 or a point of origin or a line of origin, in my opinion.

20 We have a map, but that's like those perimeters.
21 They can be -- they're gathered from folks in the field
22 and they're close, but they're not necessarily always
23 accurate.

24 Q. So, backing up a little, as we discussed
25 earlier, your initial proposal for this fuel break

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1 included a 14-foot ground spacing. Is that true?

2 A. Yes, sir.

3 Q. And then your supplemental proposal included a
4 14- to 20-foot ground spacing.

5 A. Yes, sir.

6 Q. And you chose not to model that in FARSITE even
7 though it was part of your proposal.

8 A. Yes.

9 Q. And would you agree that FARSITE has the
10 capability of modeling that?

11 A. Yes, but I wanted to avoid the subjectivity,
12 just like we're getting into it, of what percentage to
13 reduce where, without getting on the ground to see it.

14 Q. Can the FARSITE model -- can the FARSITE
15 simulation contain errors?

16 A. Of course.

17 Q. Can it contain errors in the underlying input
18 data?

19 A. Underlying input meaning the LANDFIRE data?

20 Q. LANDFIRE data, wind data, or any of the other
21 data the modeler inputs into the model.

22 A. It could.

23 Q. Can it contain errors in the model itself?

24 A. As far as how FARSITE runs?

25 Q. Yes.

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1 A. I'm not aware of it, but it may be there.

2 Q. Well, isn't there a concept called model error
3 in FARSITE?

4 A. I understood your question to say if there were
5 errors in FARSITE, and modeling error, yes, there could
6 be a modeling error.

7 Q. So, what is modeling error?

8 A. It's the variability, again, in the outputs,
9 modeling error, and you're also trying to use 30-meter
10 pixels to exactly replicate what's on the ground, for
11 instance, in the Blackfeet Forest. Those 30-meter
12 pixels are not perfectly square and perfectly round.

13 Q. Is it recognized that FARSITE tends to exhibit
14 modeling error more often under extreme conditions?

15 A. I would say yes because our crown fire modeling
16 is not as robust as our surface fire because the
17 variable is so great.

18 Q. And as we discussed earlier, the actual Red
19 Eagle Fire was a crown fire.

20 A. Yes.

21 Q. And your model was, for much of its progression,
22 a ground fire.

23 A. Yes.

24 Q. And the weather conditions were certainly
25 extreme in both the modeled fire and the actual fire.

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1 A. Um-hum.

2 Q. Could those --

3 THE COURT: Sir, give us an audible answer.

4 THE WITNESS: Oh, I'm sorry. Yes.

5 THE COURT: Thank you.

6 MR. BAIR: Thank you, Your Honor.

7 BY MR. BAIR:

8 Q. Could those extreme weather conditions lead to
9 model error in attempting to simulate the fire that you
10 attempted to simulate?

11 A. Of course, because the -- yes.

12 Q. Can FARSITE modeling -- FARSITE simulations also
13 reflect user error?

14 A. Sure.

15 Q. What is user error?

16 A. It's mistakes I made, like not turning on the
17 spotting, for one good example.

18 Q. I truly appreciate your honesty about that.

19 A. It's hard to hide.

20 Q. So, earlier, in discussing that spotting with
21 Mr. Anderson, you said that implementing those settings
22 is not an automatic process. Is that true?

23 A. It is not.

24 Q. And in this case you made that spotting error
25 because of a failure of memory; you just forgot to

1 engage it.

2 A. I did.

3 Q. Are you aware of FARSITE's bookmark
4 functionality?

5 A. Of course.

6 Q. And does that bookmark functionality allow a
7 user to replicate settings among multiple simulations?

8 A. It does.

9 Q. And, in fact, you produced some bookmark files
10 during the course of your simulations in this case.

11 A. Um-hum.

12 Q. And so a given modeler, a given professional,
13 could re-import the same settings many different times
14 if they wished to.

15 A. Yes.

16 Q. Without the risk of those errors being corrupted
17 by a faulty memory, those settings being corrupted by a
18 faulty memory.

19 A. That's true.

20 Q. So, that error was present in the modeling that
21 underlied your 2015 affidavit, wasn't it?

22 A. I have already said that, yes, sir.

23 Q. And it was also in your 2016 initial expert
24 report.

25 A. Yes, sir.

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1 Q. And you didn't catch that error until Dr. Finney
2 pointed it out to you in, I believe, March, in his
3 rebuttal report.

4 A. Yes.

5 Q. In fact, you didn't actually discover that error
6 until the day before your deposition, when you chose to
7 take a closer look at your output.

8 A. As I said in my deposition, that's absolutely
9 true. I knew something was wrong. I couldn't put my
10 finger on it, and I finally found it, literally at the
11 midnight hour.

12 Q. And as we discussed earlier, you ignited the
13 simulated fire in a place where there aren't confirmed
14 reports that it actually started.

15 A. Yes.

16 Q. And you also ignited a fire at a time before the
17 first confirmed reports of a fire burning.

18 A. Yes, because the fire investigation reports had
19 smoke, as I've stated before, along the suspension
20 bridge area and the way into Red Eagle Lake and a couple
21 other areas.

22 Q. And regardless of how much the difference is,
23 you've admitted that your simulated fire reaches the
24 boundary later than the actual Red Eagle Fire did.

25 A. Do we know exactly what time the Red Eagle Fire

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1 hit the boundary?

2 Q. Well, you've said that the reports were in the
3 afternoon of the 29th, didn't you?

4 A. Evening of the 29th, sir.

5 Q. Okay. So, is it your position that your fire
6 reaches the boundary at more or less the same time?

7 A. About the same time, yeah.

8 Q. Okay. So, you've testified that the forests in
9 this area are mixed conifer. Is that true?

10 A. Yes, sir.

11 Q. But you've heard testimony over the last two
12 days that they are, in fact, subalpine forests.

13 A. Subalpine for habitat, yes, sir.

14 Q. Okay.

15 Thank you, Mr. Schulte.

16 THE COURT: All right.

17 Any redirect?

18 MR. ANDERSON: Thank you, Your Honor.

19 REDIRECT EXAMINATION

20 BY MR. ANDERSON:

21 Q. Mr. Schulte, were you attempting to reconstruct
22 the Red Eagle Fire in your modeling?

23 A. No, sir.

24 Q. This --

25 A. Not the exact fire.

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1 Q. You weren't acting as an accident
2 reconstructionist like they act in a car wreck case,
3 were you?

4 A. No, sir.

5 Q. Can any computer fuel and fire behavior model
6 actually and precisely model a specific fire?

7 A. As Mr. Bair pointed out, there is model error,
8 and there will not be necessarily an exact replication
9 of any fire, in my opinion.

10 Q. When you testified that you did not use the
11 more -- the more up-to-date fuel modeling, what was the
12 reason that you -- excuse me, the fuel models --

13 A. Um-hum.

14 Q. -- Scott and Burgan models, when did they come
15 out?

16 A. They came out -- I think it was 2002 or '3, if I
17 remember correctly. Scott and Burgan's article, I've
18 got it cited, and I would have to look real quick for
19 the exact publication date. It may have been 2005.

20 Q. What's the reason you didn't use those more
21 recent fuel models as opposed to the Anderson fuel
22 models?

23 A. Trying to put myself in the position of a
24 planner at the time just before the Red Eagle Fire or in
25 the nineties, prior to the Red Eagle Fire, they would

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1 not have had Scott and Burgan to use.

2 Q. Opposing counsel's made a specific criticism of
3 your failure to adjust for crown spacing.

4 A. Yes, sir.

5 Q. Is that adjustment process a dynamic process or
6 a static process in the modeling process?

7 A. In FARSITE?

8 Q. Well, when you are -- putting you back into the
9 time of 1998 or 2000 or 1995, when you say a prudent
10 forest manager would be using this modeling to assess
11 fuels treatments along this border, what would they --
12 what resources would they have available? They would be
13 able to go on the ground at that time, wouldn't they?

14 A. Yes, sir, they would. They would have to do a
15 stand exam, see what was actually there.

16 Q. And you didn't have the -- you didn't have the
17 ability to do a stand exam in this case because the fire
18 had already burned up the crowns in question.

19 A. Yes.

20 Q. So, if you were prudent in two thousand -- in
21 1995 or so, before the Red Eagle Fire, you could have
22 gone out and assessed the crowns and the spacing in the
23 planning process.

24 A. Yes.

25 Q. You couldn't do that in this case, could you?

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1 A. No, sir.

2 Q. When did you realize that crown spacing would be
3 a problem?

4 A. As far as what the impacts would be in the
5 proposed fuel break?

6 Q. Yes.

7 A. Okay. Again, Dr. Finney did some runs of the
8 models that I had submitted, and he showed that there's
9 a slight increase in the wind speed, a slight increase
10 in the spread rates, but a major reduction in the flame
11 lengths and intensities within the treatment zone. And
12 I said, well, if it's going to be a negative impact to
13 the forest, we don't necessarily need it.

14 Q. Is that what a prudent fuel modeler would do in
15 the trial and error process that we've been discussing
16 here?

17 A. I think so.

18 Q. And when did you get that information?

19 A. I think it was March, after my January
20 submission, March or February.

21 Q. Now, we're talking about -- we're talking about
22 the June 15th Finney report.

23 A. Oh, I'm sorry. I misunderstood.

24 Q. All right.

25 A. Okay.

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1 Q. When did you get that information about crown
2 spacing?

3 A. That was June, um-hum.

4 Q. That was after your supplemental report,
5 correct?

6 A. Yes, sir, it was.

7 Q. And that was after the Court had already made a
8 decision that reports would be completed at that time.

9 A. Yes, sir.

10 Q. In the normal planning process, you would have
11 gone back to the planning process and re-assessed the
12 crown spacing issue, wouldn't you?

13 A. I could have, yes.

14 Q. You couldn't do that in this case because --
15 because we're in -- in litigation and we're under time
16 constraints.

17 A. Yes, sir.

18 Q. But all of this planning and cerebrating,
19 developing scenarios, and considering specific factors
20 could have been done before the Red Eagle Fire --

21 A. I think so.

22 Q. -- as opposed to afterwards.

23 A. Yes, sir.

24 MR. ANDERSON: No further questions, Your Honor.

25 THE COURT: All right.

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1 Anything further, Mr. Bair?

2 MR. BAIR: Very briefly.

3 THE COURT: All right.

4 RECROSS EXAMINATION

5 BY MR. BAIR:

6 Q. One clarification question, Mr. Schulte. Is it
7 true that there were unburned stands even after the Red
8 Eagle Fire?

9 MR. ANDERSON: Your Honor, objection. Outside
10 the scope of --

11 MR. BAIR: It is quickly going to be apparent
12 that this is within the scope, Your Honor.

13 THE COURT: Well, let's get right to the scope,
14 then.

15 MR. BAIR: Certainly.

16 BY MR. BAIR:

17 Q. You just discussed with Mr. Anderson your
18 inability to personally observe crown spacing. Is that
19 true?

20 A. Yes.

21 Q. Is it true that there were unburned stands in
22 the wake of the fire that would have demonstrated that
23 ground spacing?

24 A. They would not have burned because there was a
25 difference in crown spacing compared to the rest of the

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1 stands, most likely. So, I don't think they would have
2 been a true representation of what the crown spacing
3 was.

4 Q. Do you have any observational way of confirming
5 that those stands would have had different spacing from
6 other parts of the forest?

7 A. Not that were in the Red Eagle Fire, no, sir.

8 Q. Okay. You're just assuming that that's the
9 case.

10 A. Yes.

11 Q. Earlier -- so, let's talk about the scope of
12 your opinion here. You just discussed with Mr. Anderson
13 what forest managers would have known or would not
14 know -- would not have known at the time they would have
15 had to make decisions. Is that true?

16 A. Yes.

17 Q. And part of your testimony here is your attempt
18 to show what those forest managers could have
19 implemented.

20 A. Yes.

21 Q. But you have also testified that this
22 prescription of yours would have stopped the fire. Is
23 that true?

24 A. Would have slowed the fire.

25 Q. Okay, but it would have protected the forests, I

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1 believe you said, from the fire.

2 A. Yes.

3 Q. And so part of this is showing that the fire
4 you're modeling is sufficiently similar to the actual
5 fire to make that conclusion. Is that true?

6 A. It's a high-intensity fire, yes, sir.

7 Q. Okay. So, as an example, earlier, you said that
8 you chose not to perform the more precise work of going
9 in, polygon by polygon, and converting areas from
10 whatever unforested fuel model they are to the resulting
11 fuel model. Is that true?

12 A. True.

13 Q. And you've also testified that you made the
14 error that you've admitted to about spotting.

15 A. Yes.

16 MR. ANDERSON: Your Honor, this is beyond the
17 scope.

18 MR. BAIR: I have two more questions, Your
19 Honor.

20 THE COURT: Well, that's kind of beside the
21 point. I sustain the objection.

22 MR. BAIR: Okay.

23 BY MR. BAIR:

24 Q. You used the phrase earlier where you quoted
25 "all models are wrong but some are useful."

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1 A. Yes.

2 Q. Is that true?

3 If a model is wrong enough, does it stop being
4 useful?

5 A. Yes.

6 MR. BAIR: Thank you.

7 THE COURT: All right. Mr. Schulte, thank you
8 very much for your testimony. You may step down.

9 THE WITNESS: Thank you, Your Honor.

10 MS. PIROPATO: May I approach, Your Honor?

11 THE COURT: Yes.

12 MR. ANDERSON: Plaintiff calls John Gilham, Your
13 Honor.

14 THE COURT: All right. Please come forward,
15 sir.

16 Good afternoon.

17 MR. GILHAM: How are you doing?

18 THE COURT: Would you please raise your right
19 hand.

20 Whereupon--

21 JOHN H. GILHAM

22 a witness, called for examination, having been first
23 duly sworn, was examined and testified as follows:

24 THE COURT: Please be seated.

25 DIRECT EXAMINATION

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1 BY MR. ANDERSON:

2 Q. Mr. Gilham, would you state your full name for
3 the record.

4 A. My full name is John Hunter Gilham.

5 Q. Where do you live, Mr. Gilham?

6 A. Browning, Montana.

7 Q. And how long have you lived in Browning,
8 Montana?

9 A. Most of my life. I have been gone off and on
10 for work and college.

11 Q. And did you go to school after high school?

12 A. I did. I went to both college and graduate
13 school at the University of Montana, here in Missoula.

14 Q. And what -- did you get a degree in a --

15 A. I got a bachelor of science degree in resource
16 conservation, and that degree qualifies me as both a
17 forester and a rangeland management specialist.

18 Q. And when did you get that degree, sir?

19 A. 2003.

20 Q. And then did you go on to school?

21 A. I did. From 2008 to 2010, I attended graduate
22 school here, also at the university, via the School of
23 Forestry.

24 Q. And did you get an advanced degree in forestry
25 there?

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1 A. No. I finished all my coursework, but I didn't
2 complete my thesis. So, I call myself a grad school
3 dropout.

4 Q. Have you worked in your adult life?

5 A. I have. I have worked in one form or another
6 within the discipline of forestry and fire, wildland
7 fire, from 2000 to the present date.

8 Q. And where have you worked from 2000 to the
9 present date?

10 A. I worked for the Bureau of Indian Affairs, the
11 branch of forestry and fire, at Fort Washakie, Wyoming,
12 from 2001 through 2004. In 2000, I worked as an AD
13 firefighter out of the Blackfeet Fire Program. And from
14 2004 to 2006, I was at the regional -- Rocky Mountain
15 Regional Forestry and Fire Office for the Bureau of
16 Indian Affairs, in Billings, Montana.

17 Q. And what were your job duties there, sir?

18 A. I was a field specialist.

19 Q. And what did that entail?

20 A. Although I was a field specialist, much of the
21 work I did was on the forestry side, working on
22 inventories, forest inventories, Northern Cheyenne and
23 Blackfeet Agencies.

24 Q. And then from 2008 on, what have you done?

25 A. From 2008 to 2010, I was in graduate school. I

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1 worked in two thousand and -- in 2007 and 2008 for
2 Glacier Park as a seasonal firefighter. I also worked
3 2006 through 2008 as a Forestry Department Chair at
4 Blackfeet Community College. And in 2009, I worked as a
5 fuels technician for the Blackfeet Tribe. And 2010 to
6 present, I have been the Blackfeet forest manager.

7 Q. Now, was there some point in time after the Red
8 Eagle Fire in 2006 that the -- that the management of
9 the Blackfeet Forest was taken over under what's called
10 a 638 contract?

11 A. Yes. Since 2008? Yeah, that occurred both with
12 fire and forestry.

13 Q. And what does that entail? What is a 638
14 contract, generally?

15 A. It would be Public Law 93-638, and what happens
16 is it enables the Tribe to contract -- to run the
17 specific function or program, and that's done by
18 contracting with the Federal Government to use the funds
19 that the BIA, the Bureau of Indian Affairs, would use so
20 that the Tribe is able to exercise something called
21 self-determination and oversee these functions for
22 itself.

23 Q. Does the United States continue to have the
24 trust responsibility under a 638 contractual
25 relationship?

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1 MS. DRAPER: Objection, Your Honor. I believe
2 that calls for a legal conclusion, talking about a trust
3 responsibility of the United States.

4 THE COURT: Well, first of all, will you get
5 near a microphone so we can hear you a little better?

6 MS. DRAPER: Oh, I'm sorry. I apologize, Your
7 Honor. Is this better?

8 THE COURT: Yes, thank you.

9 MS. DRAPER: Objection, Your Honor. This calls
10 for a legal conclusion. Mr. Anderson is asking about
11 the legal trust responsibilities of the BIA.

12 THE COURT: I'll take his understanding.
13 Objection overruled.

14 MR. ANDERSON: Thank you, Your Honor.

15 THE WITNESS: The trust responsibility cannot be
16 delegated away from the Bureau of Indian Affairs. So,
17 the BIA still acts in its capacity as trustee for the
18 Blackfeet Tribe.

19 BY MR. ANDERSON:

20 Q. But as of today, your office basically manages
21 the forest and the fire --

22 A. Yeah. We contract to oversee the operations
23 associated with the function, but the BIA still reviews
24 the work that we do, and the superintendent still has
25 authority and -- approval authority and authority to

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1 oversee -- to oversee the work that we do in terms of --
2 usually it's in terms of approval of projects.

3 Q. What I'd like to do now is focus on your time
4 with the BIA before the Red Eagle Fire. You were
5 employed with the BIA before the Red Eagle Fire. Is
6 that right?

7 A. Yes, I was.

8 Q. And is that in the Billings office or the
9 Browning office?

10 A. The Billings office and Fort Washakie, Wyoming.

11 Q. And what was your job with the BIA during that
12 period?

13 A. From 2001 to 2004, I was a wildland firefighter.
14 So, a forestry technician, fire, it's called at Fort
15 Washakie, Wyoming. And from 2004 to 2006, I was a field
16 specialist for the Bureau of Indian Affairs in Rocky
17 Mountain Region, Billings, Montana.

18 Q. What did you do in that regard?

19 A. I was a fuel specialist, but I also -- most of
20 the work I did was on the forestry side, doing
21 inventories at Blackfeet Agency and Northern Cheyenne
22 Agency. Also, I was responsible for putting together
23 fuels files for fuels projects around the region, at the
24 regional office.

25 Q. Did you assist the BIA's Blackfeet forestry --

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1 Blackfeet director in developing fuels treatment
2 programs during that period of time?

3 A. No, I did not.

4 Q. Did you -- did you interact with that person at
5 all?

6 A. Yes, I did. When we did the inventory in two
7 thousand -- the inventory at Blackfeet, the last
8 forestwide inventory was in 2004 and 2005. In 2005, I
9 worked a lot on the field operations associated with
10 that inventory. So, I had a lot of opportunity to visit
11 with the forest manager, who was Chet Gladstone at that
12 time, for the Bureau of Indian Affairs at Blackfeet
13 Agency.

14 Q. Was he the person responsible for developing or
15 identifying fuels projects and seeing that they were
16 accomplished?

17 A. I don't know how he had it structured, if he had
18 that delegated to a person named Ray Hart, who was the
19 fuels technician at that time, or how exactly he had it
20 structured, but he -- because I wasn't working there,
21 but the forest manager would have had overall
22 responsibility.

23 Q. Did you have an opportunity to observe how
24 either Ray Hart or Chet Gladstone interacted with the
25 Tribe during that period of time with respect to fuels

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1 projects?

2 A. I didn't have occasion to see that.

3 Q. Did you have occasion to watch the development
4 and implementation of fuels projects during that time?

5 A. No, I didn't.

6 Q. Okay. After the -- after the Red Eagle Fire,
7 did the BIA conduct salvage sales of -- for timber in
8 the Red Eagle Forest?

9 A. Yeah. In the Red Eagle Fire, there was a
10 large-scale salvage logging operation. So, the BIA
11 planned and administered a timber sale.

12 Q. Did you have an opportunity to observe how that
13 was conducted?

14 A. No.

15 Q. Did you know, as the -- did you know whether the
16 prices that were obtained in that salvage sale were
17 prices that were fair market value prices or something
18 other than that?

19 A. You know, I -- I'm not sure of that at all.

20 Q. Okay. Did the salvage sales include salvage
21 projects with Blackfeet loggers?

22 A. Yes.

23 Q. And were those Blackfeet loggers paid the same
24 rate as other loggers?

25 A. Well, they -- they would have paid the Tribe and

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1 wouldn't have been paid from the Tribe; they would have
2 been paid from the mill.

3 Q. And do you know whether they were paid fair
4 market -- when they -- can you just tell us how those
5 contracts were let, if you know?

6 A. How they were --

7 Q. How were they -- how were they -- how were they
8 con -- how -- what were the specifications for the
9 Blackfeet logger contracts as opposed to other logger
10 contracts?

11 A. I don't know.

12 Q. Okay. And what is -- what is -- never mind.

13 Were you involved in the dealings with the Tribe
14 with respect to the dwarf mistletoe problem in the
15 Red -- in the Blackfeet Forest before the Red Eagle
16 Fire?

17 A. I -- the only thing that I know of is when we
18 started the 2005 inventory, when we were in the field,
19 training the field crew, I had opportunity to visit a
20 little bit with Chet, and that was when -- the subjects
21 that he brought up was the clearcut issue there, and I
22 was at the regional office at that time, so I was there
23 as a regional office employee, but Chet had relayed to
24 me some of the goings-on.

25 Q. Could you describe that for us?

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1 A. It seems like it was late 2003 or so. Chet was
2 aware that there was a problem there with dwarf
3 mistletoe, and it was -- it was his conclusion that the
4 Tribe's limitation on clearcutting was something that
5 wasn't conducive to control of dwarf mistletoe or proper
6 ecological pine management, for that matter.

7 Q. And what did he do?

8 A. What he did was he visited with the Council and
9 brought the Council on a field trip and showed them what
10 dwarf mistletoe looked like, what the stands that were
11 infected with -- what it was doing with the trees within
12 those stands, and how you -- how you suppress dwarf
13 mistletoe. And so the result of that was that the Tribe
14 passed a resolution to allow clearcutting up to, I
15 believe, 30 acres.

16 Q. Would you say that is an example of a good
17 relationship between the BIA and the Blackfeet Tribal
18 Council in terms of communications?

19 A. Yes. It's what needed to happen. It seems like
20 Chet recognized that the current policy situation was
21 something that wasn't conducive to proper forest
22 management. So, he took it upon himself to visit with
23 the Tribal Council and educate the Tribal Council, and
24 he seems to have come away with favorable results, and,
25 yes, it was good communication.

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1 Q. Is that typical of the nature of the
2 relationship you saw between the BIA and the Blackfeet
3 Tribal Council?

4 A. No. That seems to be sort of a one-of-a-kind-
5 type situation.

6 Q. Mr. Gilham, you've basically lived, with the
7 exception of your time at school and your time in
8 Billings with the BIA, on the Reservation your whole
9 life. Is that right?

10 A. Yeah. I'd say from the time I was five years
11 old or so, six, up until my age now, and then between
12 that time period, there would only be the times when I
13 was away at school or working for the Bureau of Indian
14 Affairs.

15 Q. Did you use the forest during -- do you use the
16 forest yourself?

17 A. I do.

18 Q. What do you use it for?

19 A. Well, I use it for -- I'm a bow hunter, so I
20 frequent the woods bow hunting, and I also go to the
21 woods just for solitude. That's one of the reasons I
22 went into forestry, is that -- that connection with
23 nature, and that's something that's also, I guess, in
24 place in terms of our cultural values there or my
25 cultural values. I'm also a cultural within the Tribe's

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1 spiritual ways, and so I gather certain plants that we
2 use, and the connection to nature is something of the
3 utmost importance to a Blackfeet person.

4 Q. After the Red Eagle Fire, how did the fire
5 affect your ability to use the forest in the way you've
6 historically used it?

7 A. It drastically affected it. Areas that we were
8 used to hunting in, areas that we were used to going and
9 being able to be in the woods and use the woods in the
10 ways that I've described, it was completely disrupted.
11 The areas completely changed, and even as a forester,
12 it -- the loss isn't lost on me. I remember doing work
13 when I was -- maybe the first or second year I was
14 forest manager for the Tribe, and we were in an area up
15 near Toad Creek where it still looks like what our
16 forest used to look like, and I remember feeling
17 emotional and then I felt like crying.

18 MR. ANDERSON: No further questions.

19 THE COURT: All right.

20 Cross examination.

21 CROSS EXAMINATION

22 BY MS. DRAPER:

23 Q. Good afternoon, Mr. Gilham.

24 A. Good afternoon.

25 Q. Apart from your work at the Rocky Mountain

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1 Regional Office as a fuel specialist from 2004 to 2006,
2 you have not had any other firsthand experience with
3 fuels treatments on the Blackfeet Reservation prior to
4 the Red Eagle Fire. Is that correct?

5 A. Other than to put together the project files at
6 the regional office and review those, no.

7 Q. And as someone employed at the regional office,
8 you were not present typically for day-to-day
9 interactions between the Tribe and BIA. Is that
10 correct?

11 A. Correct.

12 Q. And your seasonal work back in 2000 with the
13 Tribe's commodity program did not involve managing the
14 Tribal Forest. Is that correct?

15 A. No.

16 Q. So, I asked that question badly. You're
17 agreeing with me that my statement is correct?

18 A. Your statement is correct. The commodity
19 program has nothing to do with forestry.

20 Q. Thank you.

21 And, likewise, your -- the commodities program
22 did not involve planning or implementing fuels
23 treatments. Is that correct?

24 A. No.

25 Q. And, so, it was not until 2009, three years

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1 after the Red Eagle Fire, that you were designated the
2 Tribe's fuel specialist. Is that correct?

3 A. Fuels technician, yes, in 2009.

4 Q. Thank you. Thank you for the clarification.

5 And that would have been after the Tribe began
6 managing the fire program at Blackfeet under a 638
7 contract. Is that correct?

8 A. Yes.

9 Q. And you were not involved in the Tribe's
10 decision to enter into a 638 contract with BIA to manage
11 the forest. Is that correct?

12 A. No.

13 Q. And --

14 A. That's correct. Sorry.

15 Q. Thank you. I apologize. I'm asking the
16 questions backwards.

17 And, likewise, you were not involved in the
18 Tribe's decision to enter into a 638 contract with BIA
19 to manage the fire program. Would you agree with that?

20 A. I would agree with that.

21 Q. Mr. Gilham, you are not in a position to know
22 what the relationship between the BIA and the Council
23 was earlier than the period you spoke about, say in
24 1998. Is that a fair statement?

25 A. That's fair.

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1 Q. Okay. And the same would be true for, say,
2 2003?

3 A. Can you repeat the question, please?

4 Q. Sure.

5 In 2003 -- you're not in a position to know what
6 the relationship between BIA and the Tribal Council was
7 in 2003. Is that a correct statement?

8 A. Correct.

9 Q. Okay. And the same would hold true for 2004,
10 basically until you entered into the -- your position at
11 the regional office. Is that correct?

12 A. Correct.

13 Q. And you testified a moment ago that the Tribe
14 currently manages the forest under the same -- currently
15 manages the forest under a 638 contract, correct?

16 A. Correct.

17 Q. And does the Tribe manage the forest under the
18 same forest management plan that was adopted when BIA
19 oversaw the program?

20 A. Yes.

21 Q. And is it accurate to state that the Tribe has
22 not changed the annual allowable cut that was in place
23 when BIA managed the forestry program?

24 A. That's accurate.

25 Q. In the years since you have been forest manager,

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1 from 2010 to the present, there's not been a problem
2 with mistletoe. Is that correct?

3 A. No, the -- the fires were pretty much effective
4 at eradicating mistletoe.

5 Q. So, in your term as forest manager, you've not
6 had to deal at all with any mistletoe eradication
7 problems. Is that accurate?

8 A. That's accurate.

9 Q. While the forest was still under BIA's
10 management, the Tribe contracted to carry out forest
11 development programs. Is that an accurate statement?

12 A. Can you repeat that, please?

13 Q. Sure.

14 While the forest was still being managed by BIA,
15 is it true that the Tribe was -- the Tribe contracted to
16 carry out forest development programs?

17 A. That's true.

18 Q. And was there a period of time when BIA
19 suspended payments to the Tribe because the contract
20 specifications were not being met?

21 A. Yes.

22 MS. DRAPER: I have nothing -- just a moment,
23 Your Honor.

24 BY MS. DRAPER:

25 Q. Mr. Gilham, the area burned by the fire was

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1 commercial timberland. Is that correct?

2 A. Yes.

3 Q. Okay. And under the forest management plan, it
4 would be -- that timber that was -- the commercial
5 timber would be scheduled to be cut on a 100-year
6 rotation. Is that correct?

7 A. It just depends on the individual stand.

8 Q. Would it typically be part of what is known as a
9 harvest schedule?

10 A. Typically, yes.

11 Q. Okay.

12 Nothing further, Your Honor.

13 THE COURT: All right.

14 Any redirect?

15 MR. ANDERSON: Two questions.

16 REDIRECT EXAMINATION

17 BY MR. ANDERSON:

18 Q. Would the Tribe have preferred that the -- that
19 its mistletoe problem be taken care of via a clearcut as
20 opposed to a catastrophic wildfire?

21 A. The Tribe, in my opinion, would have preferred
22 clearcutting and that type of management activity to
23 take -- to suppress mistletoe over a catastrophic
24 wildfire.

25 Q. And with respect to the timber that was burned

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1 in the Red Eagle Fire, what was the -- what was the
2 primary nature of that timber?

3 A. That --

4 Q. Or the primary species?

5 A. The species, it was a lodgepole spruce cover
6 type, I believe.

7 Q. Okay. Is that based on the inventory that you
8 helped to conduct?

9 A. Yeah. That's just my recollection. It's just
10 from someone who lived there for a lot of years and
11 someone who probably has seen more of the forest than
12 just about anybody, especially on that inventory.

13 MR. ANDERSON: No further questions.

14 THE COURT: All right.

15 MS. DRAPER: Just very briefly, Your Honor.

16 THE COURT: I always thought mistletoe was a
17 good thing. I don't know.

18 RECROSS EXAMINATION

19 BY MS. DRAPER:

20 Q. Mr. Gilham, would you agree that the Blackfeet
21 Forest is a subalpine forest?

22 MR. ANDERSON: Your Honor, that's beyond the
23 scope.

24 THE COURT: I think it is beyond the scope.
25 I'll sustain the objection.

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1 MR. BAIR: If I may, Your Honor, Mr. Anderson
2 did inquire into the species of trees and, thus, the
3 forest ecology. We feel like this is directly within
4 the scope of that question.

5 THE COURT: You know what, I stand corrected.
6 Let's have an answer.

7 Can you re-ask the question for us?

8 MS. DRAPER: Certainly, certainly.

9 BY MS. DRAPER:

10 Q. Would you agree, Mr. Gilham, that the Blackfeet
11 Forest is a subalpine forest?

12 A. Subalpine in what context?

13 Q. It terms of the types of trees.

14 A. There are stands within the Blackfeet Forest
15 that could be categorized as a subalpine fir habitat
16 type, if that's what you mean.

17 MS. DRAPER: Thank you.

18 THE COURT: All right.

19 Mr. Gilham, thank you very much for your
20 testimony. You are excused.

21 MR. ANDERSON: The Plaintiff calls Brian Long.

22 THE COURT: All right.

23 Good afternoon. Please raise your right hand.
24 Whereupon--

25 BRIAN D. LONG

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1 a witness, called for examination, having been first
2 duly sworn, was examined and testified as follows:

3 THE COURT: Please be seated.

4 DIRECT EXAMINATION

5 BY MR. ANDERSON:

6 Q. Mr. Long, would you state your name for the
7 Court, please.

8 A. Brian Douglas Long.

9 Q. And where do you live, Mr. Long?

10 A. I live in Missoula, Montana.

11 Q. And what is your occupation?

12 A. Currently, I'm a consulting forester.

13 Q. And how long have you been engaged as a
14 consulting forester?

15 A. Since early in 2012.

16 Q. And before 2012, what was your occupation?

17 A. I worked for the Department of Natural Resources
18 and Conservation, Montana Department of Natural
19 Resources and Conservation. I started working there in
20 1975, in Bozeman.

21 Q. And what jobs did you have at the Department of
22 Natural Resources and Conservation with the State of
23 Montana?

24 A. I did forest inventory work of one kind or
25 another the entire time, 36 1/2 years.

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1 Q. And before doing your work in forest inventory
2 with the Montana Department of Natural Resources and
3 Conservation, did you get education in the area of
4 forestry?

5 A. Yes. I have a BS degree in forest management
6 from Iowa State University, graduated in 1975.

7 Q. And so did you go to work for the Department
8 thereafter?

9 A. Yeah. I essentially started work for the
10 Department in July, after graduation. I think it's
11 important to mention also, while I was at Iowa State, I
12 had classes in forest pathology, silviculture, forest
13 ecology, forest management, forest mensuration, and
14 photogrammetry.

15 Q. Tell us what those -- what that coursework
16 entails.

17 A. Well, basically, it just covers managing a
18 forest, all different aspects. Photogrammetry is the
19 use of aerial photos to map the forest and assess forest
20 condition and just do forestry work on the ground.
21 Forest management is where they teach you about the
22 various aspects of allowable cuts and, you know, doing
23 management activities to get the forest you want.

24 Q. Does a -- what exactly -- what are the various
25 roles of a forester in the context of working in a

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1 forest?

2 A. Well, there's -- that's a pretty big question.
3 There's a wide range of things you do, but basically
4 you're the -- your job would be, depending on who you
5 work for, to take care of the forest in various ways or
6 produce some kind of output from the forest or do fire
7 protection or -- there's a wide variety of things,
8 wildlife.

9 Q. Was it a regular part of your job to assess the
10 health of a forest?

11 A. Yes. We would do -- we did stand mapping, and
12 as part of that stand mapping at the DNRC, we kept -- we
13 would record if there were insect disease issues in the
14 stand, so that was part of it. We would record the
15 vigor, species composition, a wide variety of things.

16 Q. In the course of your work with the Department,
17 did you work with other habitat specialists?

18 A. Yes. I worked in the Forest Management Bureau,
19 so I worked with hydrologists, geologists, soil
20 scientists, silviculturists, wildlife biologists,
21 fisheries biologists, forest planners, a variety of --
22 all the disciplines, actually. Range management, also.

23 Q. And what was the -- how many acres of forest --
24 well, let me -- let me strike that.

25 What was the purpose for which the State of

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1 Montana inventoried and evaluated forests?

2 A. Well, we inventoried the forest to determine how
3 many acres we had in the location, the amount of volume
4 we had in the location, the condition of the forest. We
5 eventually evolved over time into using the inventory
6 data for -- to assess old growth acres and where,
7 various wildlife habitats. We -- that's the majority of
8 it. I'm sure I'm missing something, but we used it for
9 a wide variety of things.

10 Q. And what were you primarily concerned with in
11 your various jobs with the Department?

12 A. Well, I was the inventory specialist and the
13 supervisor of the inventory section, and that eventually
14 evolved into the technical services section, which meant
15 we were building an enterprise system using GIS, in
16 addition to all the other inventory work.

17 So, I started the stand inventory program. I
18 basically designed it. I trained people. We -- while I
19 was there, we mapped over a million acres of DNRC land,
20 about 730,000 acres of commercial forestland that was
21 within that one million. We put it in a GIS, and, you
22 know, we were asked questions about the forest on a
23 regular basis from the managers at DNRC and outside the
24 agency.

25 Q. Did you have to respond to inquiries from other

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1 agencies in state government regarding forests and
2 forest conditions?

3 A. Most of the time it was -- occasionally it would
4 be private, maybe a bank or something like that or other
5 forest industry, the Federal Government, U.S. Forest
6 Service, worked with them quite a bit. I don't remember
7 many questions coming from other state agencies. Fish &
8 Wildlife and Parks might have had something, but usually
9 that was more of an on-on the-ground logging project
10 related things.

11 MR. ANDERSON: Your Honor, I tender Mr. Long,
12 based on his experience and education, as a forester who
13 specializes in the inventory of forests and who has the
14 knowledge and experience to assess conditions of the
15 forest and treatments necessary to manage a forest and a
16 forest habitat.

17 THE COURT: All right.

18 Any voir dire?

19 MS. DRAPER: Yes, Your Honor.

20 THE COURT: All right.

21 MS. DRAPER: Your Honor, I have a few questions
22 on voir dire, and I also wanted to raise the matter of
23 the United States filed a motion in limine to exclude
24 part of Mr. Long's testimony. It's essentially the
25 testimony that goes to the health of the forest, post

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1 fire conditions in the forest, and I believe Your Honor
2 indicated that the -- prior to trial, our motion was
3 denied without prejudice, and we could reraise the
4 matter at trial. So, I'm happy to either proceed with
5 the voir dire now or argue the motion in limine if the
6 Court is inclined to hear that.

7 MR. ANDERSON: Your Honor, may I be heard there?

8 THE COURT: Sure.

9 MR. ANDERSON: The motion in limine that the
10 United States has made relates solely to Mr. Long's
11 rebuttal, which I assume, based on your previous ruling
12 today, would have to be taken up in a rebuttal phase of
13 the case.

14 THE COURT: Well, I don't -- I don't know the
15 answer to that.

16 MS. DRAPER: I'm sorry, Mr. Anderson, I'm a
17 little puzzled. I'm not certain what you mean.

18 MR. ANDERSON: The motion that the United States
19 has made is focused on Mr. Long's rebuttal report.
20 That's not where we're at right now. That's not the
21 subject of his -- of his opening testimony.

22 MS. DRAPER: And, Your Honor, if I could have
23 your indulgence for a moment, I'd beg the Court's
24 pardon. I think we may be able to resolve this issue if
25 I can state on the record my understanding of where we

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1 are.

2 So, I believe what I understand Mr. Anderson is
3 saying is that Mr. Long's direct testimony -- Mr. Long's
4 testimony today, direct testimony, will be limited
5 solely to the issues covered in his initial January 2016
6 report, and if that's so, that is consistent with what
7 Plaintiffs have indicated on the witness list.

8 Is that your intention, to stick only to the
9 subjects on the witness list?

10 MR. ANDERSON: At this time he's going to
11 testify in his opening statement consistent with his
12 original report. His original report focuses on the
13 inventory of the forest, what stands need to -- what is
14 the -- what does the inventory say, what stands need to
15 be precommercially thinned, what stands were totally
16 burned, and the nature of the trees in those stands and
17 what was lost in the burn.

18 THE COURT: All right. So, maybe we don't need
19 your motion in limine at the moment.

20 MS. DRAPER: I believe so. If I could have a
21 minute to confer with my colleagues, and just not to
22 muddy the waters, but then I guess is it your intention,
23 though, to re-introduce the rebuttal report in your
24 rebuttal portion of the case?

25 MR. ANDERSON: Maybe or maybe not.

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1 MS. DRAPER: And then we would have the same
2 objections, Your Honor. We -- I would assume we would
3 have the right to again reraise these issues in a motion
4 in limine at that point.

5 THE COURT: Well, yes, we don't know for sure
6 how the rest of the trial is going to play out. We
7 don't know if he's even going to appear as a rebuttal
8 witness. So, maybe it would be best to hold that until
9 a later time.

10 MS. DRAPER: If I could have the Court's
11 indulgence for a moment.

12 (Counsel conferring.)

13 MS. DRAPER: Your Honor, I think we have
14 resolved the matter for now, and I think as long as
15 we're clear on the record, as Mr. Anderson has stated,
16 Mr. Long will testify and limit his testimony to the
17 opinions stated in his initial report, then we have no
18 objection to his testimony, and we don't need to conduct
19 voir dire at this time.

20 THE COURT: All right, very well. In that
21 event, I will accept Mr. Long as an expert witness in
22 forestry as indicated by Mr. Anderson.

23 MR. ANDERSON: Thank you, Your Honor.

24 May I approach the witness?

25 THE COURT: Sure.

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1 BY MR. ANDERSON:

2 Q. Okay. Mr. Long, what was your assignment in
3 this case?

4 A. I had two primary assignments. One was to
5 figure out how many acres inside the Red Eagle Fire
6 perimeter on the Blackfeet Indian Reservation needed
7 thinning and how many acres needed planting. My other
8 task was to estimate how much board foot timber was
9 burned in the Red Eagle Fire on the Blackfeet Indian
10 Reservation by the Red Eagle Fire.

11 Q. And how did you undertake to conduct that
12 assignment?

13 A. Well, for the thinning and planting, I put the
14 fire perimeter into my copy of ArcMap and figured out
15 what part of it was the Blackfeet Indian Reservation. I
16 then devised a sampling scheme where I put 100 -- 25
17 100-acre circle plots inside that fire perimeter, and
18 we -- I then wrote up, you know, field instructions for
19 the crew, developed the data form, went out with the
20 crew --

21 Q. Well, let's stop you right there.

22 A. Okay.

23 Q. I want to focus on Plaintiff's Exhibit 88-13.

24 A. What's 13, the page -- oh, okay.

25 Q. It's at the bottom of the page. It's --

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1 A. I gotcha. It's page 13. Okay.

2 Q. Now, you mentioned a burn perimeter and a stand
3 map. Is that what is reflected on page 88-13?

4 A. Yes. This is a forest type map of the area
5 inside the Red Eagle Fire perimeter on the Blackfeet
6 Indian Reservation.

7 Q. Where did you get this data?

8 A. That was provided to me by you, and it's
9 apparently from some work Pete Sawyer did or he had
10 collected that during his inventory work.

11 Q. And do you understand that Pete Sawyer did an
12 inventory of the forest for the United States both prior
13 to and immediately after the fire?

14 A. I know he wrote an inventory report, and I
15 saw -- I had a copy of that report.

16 Q. And that's in the list of material that you
17 relied on in -- for this -- for this disclosure?

18 A. It was the -- this map and that inventory report
19 were essentially all I had to work with, but that was
20 more related to the volume aspect of the work rather
21 than the thinning and planting part.

22 Q. Okay. And then -- and then what did you do with
23 this map?

24 A. Well, I used that map to figure out how many
25 acres, by scan size class, there were inside that fire

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1 perimeter prior to the fire burning it.

2 Q. And how did you do that?

3 A. I put a -- basically put a point sample over the
4 top of that. I didn't have a GIS layer, GIS data, which
5 would have made my job easier. So, I put the point
6 sample over top of it, and at each point I recorded the
7 stand size class that was scanned and then expanded
8 those points out, basically simple math.

9 Q. Do you have an example of a point sample there
10 in your report that you used?

11 A. I talk about it, but I don't have an actual
12 example in here. I might have provided a copy of it in
13 my -- as part of the exhibits.

14 Q. Would Exhibit 88-38 represent what you're
15 talking about?

16 A. That's the 100-acre circles that I put in,
17 inside the perimeter, to do the thinning.

18 Q. Oh, okay.

19 A. I don't know if there is a copy of that here.

20 Q. All right, that's fine.

21 You mentioned the concept of a point sampling
22 inventory.

23 A. Yes.

24 Q. Could you tell the Court what a point sampling
25 inventory is?

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1 A. Well, basically, just as an example, let's say
2 you have ten acres of forest, square, and you put ten
3 points inside that square, and at each one of those
4 points you determine -- let's say that ten-acre square
5 is a forest type map, and at each one of those points,
6 then, you would look at that map and record what the
7 forest type was.

8 So, if there was six acres of sawtimber and four
9 acres of poletimber, then you would have six points of
10 sawtimber and four points of poletimber.

11 Q. And --

12 A. So, that's the concept that I used.

13 Q. And is that basically an on-the-ground process?

14 A. That one's not. That one was done in my office
15 using this map.

16 Q. And did the -- is the inventory reflected in
17 your disclosure?

18 A. Yeah. Well, I -- yeah, it's -- that part of the
19 work starts on -- well, I talk about it in the first
20 part on page 1, "Forest Area by Stand Size Class Prior
21 to the Red Eagle Fire." And then I did a different
22 point sample technique to figure out the unburned forest
23 acreage. I put points down over the imagery and did an
24 after-the-fire imagery at 2013, and then every place
25 where there was an unburned stand, I determined the

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1 stand size class of that unburned stand.

2 And the reason I did that was I needed to get to
3 the acres of burned forestland by stand size class
4 because there was a possibility that the proportion of
5 sawtimber/poletimber stands inside that burn was
6 different than a proportion of sawtimber and poletimber
7 across the entire Blackfeet Indian Reservation. So,
8 this way I could kind of finetune my work.

9 Q. Are your findings reflected on the tables in
10 your disclosure?

11 A. Yeah. Page 2 --

12 Q. So, that would be 88-2?

13 A. Yes, the table there, under "Estimate of Net
14 Board Foot Volume Burned in the Red Eagle Fire."

15 Q. Okay. Would you go to that, Treacie.

16 So, using your point sampling technique that you
17 placed over the stand map that we've discussed, what
18 were your findings?

19 A. Well, I ended up with a burned commercial
20 forestland area by stand size class, and you can see
21 that there, 5273 of seed/sap, 1596 acres of poletimber,
22 6106 acres of sawtimber, for a total of 12,976 acres. I
23 used -- I assumed -- and there probably was some board
24 foot volume on the seed/sap stands, but I counted that
25 as zero volume per acre, and I --

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1 Q. What we need you to do first is define the terms
2 that you're using in this graph. The first term would
3 be seed and -- seedlings and saplings. What is that?

4 A. Okay, those are trees that are under four inches
5 diameter at breast height. So, they're -- you know,
6 from a seedling maybe a foot tall to something that's
7 got a diameter 4 1/2 feet above the ground, just up to
8 four inches. Poletimber, if I remember right, was -- I
9 think it was 4.99 inches, because I think poletimber was
10 six inches to ten inches in diameter. And sawtimber was
11 greater than ten inches, 11 inches up.

12 Q. And of those three classes of timber, which of
13 those three classes are the class that -- the class
14 timber that is -- is commercially available for sale?

15 A. Well, at the moment, you know, in two
16 thousand -- prior to the fire anyway, the -- it would
17 most likely be the sawtimber stands that would have the
18 most commercial value. Poletimber would have some,
19 depending on the situation. There's -- it's -- when you
20 do this stuff, it's never 100 percent sawtimber, 100
21 percent poletimber size trees in these stands when they
22 draw the maps or they draw the stand map. So, there's a
23 mix of tree sizes in these stands, typically. So,
24 poletimber size trees or stands and sawtimber size
25 stands would have the volume that you would be

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1 interested in logging.

2 Q. And what did you find with respect to the total
3 burned acreage in the Red Eagle Fire perimeter from this
4 mapping that you did?

5 A. Well, you can see the results of it there. It's
6 under the column "Burned Commercial Forest Land," and
7 then I -- so, that was a result of those point samples.

8 Q. Um-hum. And the total -- the total area of the
9 burn is reflected in that total figure of 15,274 acres.
10 Is that correct?

11 A. Right. So, I basically, when I put the point
12 sample over that forest type map, that gave me the total
13 acreage by stand size class, and then I subtracted the
14 unburned answer from that to get the burned, the
15 unburned acres, the CFL, to get the burned acres.

16 Q. Now, this next graph converts the burned acres
17 for poletimber and sawtimber into volume. Is that
18 right?

19 A. Yes.

20 Q. What's the purpose of that conversion?

21 A. Well, it's pretty standard to take a volume by
22 stand size class and multiply it by the acres -- a
23 volume by acre by stand size class and multiply it by
24 the number of acres of that stand size class. So, that
25 was the approach I used there.

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1 And I gleaned the best information I could find
2 from that forest inventory report to get these volumes,
3 and I ended up with an average four foot per acre net
4 for sawtimber of 6434 and poletimber, 1699.

5 Q. What is sawtimber used for and what is
6 poletimber used for in the commercial market?

7 A. Well, if it -- it's -- I guess the way I'd say
8 it is if the tree is under a certain size, then it's not
9 suitable use for sawtimber. So, depending on the taper,
10 not length, the height of the tree, a lot of the trees
11 in the six- to ten-inch diameter class could be used to
12 cut boards out of and would be utilized during log --
13 you know, logged and taken to the mill.

14 And then if the -- unless the tree was a cull,
15 everything ten inches and larger would be suitable to go
16 to a mill. And trees that don't have the -- enough size
17 to them to cut boards out of, you can use it for pulp.
18 You can use it for a wide variety of products, post and
19 pole, a variety of things.

20 Q. And that 41,999 figure totals all of the volume
21 of the timber in the forest, in the burn area of the
22 forest that was -- that was commercially available for
23 sale but for the fire?

24 A. This is my estimate of net board feet that was
25 consumed by the Red Eagle Fire inside the Blackfeet

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1 Indian Reservation.

2 Q. Is this a conservative estimate?

3 A. I think it's conservative because I used a
4 pretty -- first of all, I used a pretty low poletimber
5 estimate per acre. I didn't have any place where I
6 could find volume by stand size class, except for I
7 think it was page 55 in the report for sawtimber, and
8 that was the inventory report. So, I had a table where
9 they showed board foot volume in poletimber size trees,
10 and I knew that was probably low but it was at least
11 something -- I was sure it would at least be that much
12 there. So, I used that for poletimber.

13 And then on the board foot side, I used a pretty
14 high defect that was based on the salvage volume that
15 had been logged on the Red Eagle Fire and came from the
16 sawmills of 30 percent.

17 Q. Is that a high defect rate?

18 A. Well, it is in normal green trees. It would be
19 pretty high for most species. This was primarily
20 lodgepole pine, and lodgepole pine usually doesn't have
21 a huge amount of defect in it. Other species can be
22 full of a lot of rot, so that would be a problem.

23 One of the things that happens on a -- during a
24 fire, though, is the trees have the bark burned off of
25 them, they're dead, and they pretty quickly check, get

1 splits in the bowl, which increases the defect, and then
2 the inventory couldn't account for unseen defect, and --
3 in their defect estimate, they couldn't account for
4 unseen defect or if a defect occurred during logging or
5 breakage that would occur during logging. So, there was
6 reasons to expect a higher defect on fire salvage.

7 Q. So, is this 41.99 [sic] figure, is that -- is
8 that the volume that was available for fire salvage or
9 was that the volume that was available before the fire?

10 A. That's the volume that was available for fire
11 salvage.

12 Q. Okay. And what -- did you then do an inventory
13 of the forest to determine what needed thereafter to be
14 thinned or commercially -- or planted?

15 A. Well, we -- as I said earlier, I put out 25 of
16 these 100-acre circle plots on the map. I made maps for
17 the field people and myself to use during the conducting
18 of the inventory work, topographic maps and a copy of
19 the NAIP imagery, 2013, and -- which is post fire.

20 Q. What's the NAIP imagery?

21 A. That's digital aerial photographs, and they are
22 at one-meter resolution, so they're pretty good detail.
23 They're a geographic reference, so what you can -- they
24 fit right over the top of the other maps, and you don't
25 have to do any adjusting.

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1 Q. Go to Plaintiff's Exhibit 88-38.

2 A. Okay.

3 Q. Is this the start of your -- of the -- of your
4 single point inventory to assess what needed to be
5 precommercially thinned and planted in the forest?

6 A. Yeah. That is -- that -- those are the 25
7 100-acre plots.

8 Q. And tell us what you did thereafter.

9 A. Okay. I -- this was all part of the inventory
10 plan, the design. So, I set it up to where we would go
11 out into each one of those circles and map essentially
12 three things. We got into a little more detail on this,
13 but primarily all we were really trying to determine was
14 how many acres needed to be thinned, how many acres
15 needed to be planted, and how many acres didn't need
16 either treatment, whether it was because it hadn't been
17 burned or the stocking was appropriate within the
18 guidelines we were given.

19 I then had another data field where we actually
20 estimated the number of trees per acre.

21 Q. And how many days -- I mean, was this an
22 on-the-ground inventory?

23 A. Yes, we were on the ground, and basically we
24 would walk out into that circle, do sort of a big loop
25 with little side shots going off in various directions,

1 and during that process we would draw boundaries on the
2 map, the NAIP map and -- of the various stand conditions
3 that we found there.

4 As part of that process, the field crew and
5 myself had 6.8-foot poles which would allow us to do a
6 300-acre fixed plot, and that allowed us to do the --
7 fill out the data field that related to trees per acre.
8 So, for example, the minimum -- it had to be less than
9 300 trees per acre to require planting. So, when you're
10 doing your plots out there, which varied in the number
11 depending on the stand condition, all you needed to
12 average was less than one and you were below 300 trees
13 per acre.

14 On the 600-foot or the 600 trees per acre, which
15 was the maximum number of trees, if there was more --
16 averaged more than two trees inside that circle, then it
17 needed to be thinned, and the amount of -- the category
18 from 600 to 900, 1500 to 3000, to put a stand in that
19 category, you just did the math. 1500 trees per acre,
20 that would be five seedlings inside that 300-acre circle
21 or plot that we did.

22 So, it was pretty simple to do this, and it was
23 easy to find the plots. We -- all of our -- we used
24 basic orienting and map reading skills and photo
25 interpretation skills. There were slash piles, roads,

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1 changes in cover, draws, ridgetops. I mean, we -- the
2 tree height was low, so you could see very well in all
3 directions. It was, in my experience, pretty simple and
4 pretty easy inventory work on the scale of stuff that I
5 had been used to doing.

6 THE COURT: Mr. Anderson, why don't we break
7 here for the day.

8 MR. ANDERSON: Okay.

9 THE COURT: We will reconvene at 9:30 tomorrow
10 morning.

11 (Whereupon, at 5:01 p.m., the proceedings were
12 adjourned.)

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12 DATED: 9/9/2016 s/Susanne Bergling

13 SUSANNE BERGLING, RMR-CRR-CLR

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